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USAID/GEORGIA
FOREIGN ASSISTANCE ACT SECTION 119 BIODIVERSITY ANALYSIS

August 2019

This report is made possible by the support of the American People through the United States Agency for International Development (USAID). The Cadmus Group LLC and ICF prepared this report under USAID's Environmental Compliance Support (ECOS) Contract, Contract Number GS00Q14OADU119, Order No. 7200AA18N00001. ECOS is implemented by ICF and its subcontractors. The contents of this report are the sole responsibility of the authors and do not necessarily reflect the views of USAID or the United States Government.

USAID/GEORGIA

FOREIGN ASSISTANCE ACT

SECTION 119 BIODIVERSITY ANALYSIS

AUGUST 2019

Prepared by ICF and The Cadmus Group, LLC

FAA Section 119 Analysis Team: Elisa Perry, Paola Bernazzani, Levan Mumladze, and Ketevan (Mary Kate) Ugrekhelidze

Contributors: Taner Durusu, Jon Hecht, Molly Hellmuth, Michael Minkoff, Jodi O'Grady, Raymond von Culin, and Andrea Vargas Guerra

ICF Incorporated
9300 Lee Hwy
Fairfax, VA 22031 USA
+1-703-934-3000
www.icf.com

The Cadmus Group, L.L.C.
100 Fifth Avenue, Suite 100
Waltham, MA 02451
617-673-7000 Fax 617-673-7001
www.cadmusgroup.com

ACRONYMS

Analysis	Foreign Assistance Act Section 119 Analysis
APA	Agency of Protected Areas
CSO	civil society organization
CDCS	Country Development Cooperation Strategy
CENN	Caucasus Environmental NGO Network
CITES	Conversation on International Trade in Endangered Species of Wild Fauna and Flora
DCFTA	Deep and Comprehensive Free Trade Area
DO	development objective
EEZ	exclusive economic zones
EIA	Environmental Impact Assessment
EPI	Environmental Performance Indicators
EU	European Union
FAA	Foreign Assistance Act of 1961
FGD	focus group discussion
GDP	gross domestic product
GEF	Global Environmental Fund
GEL	Georgian Lari
GHG	greenhouse gas
GIS	geographic information system
GiZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GNTA	Georgian National Tourism Administration
GOG	Government of Georgia
IBiS	GiZ Integrated Biodiversity Management, South Caucasus
INDC	Intended Nationally Determined Contributions
IR	intermediate result
IRSWR	internal renewable surface water resources
IUCN	International Union for Conservation of Nature
MEPA	Ministry of Environmental Protection and Agriculture
MW	megawatt
NACRES	Centre for Biodiversity Conservation & Research
NBSAP	National Biodiversity Strategy and Action Plan

NFA	National Forestry Agency
NGO	non-governmental organization
NRM	natural resource management
NTFP	non-timber forest product
PAD	project appraisal document
REC Caucasus	Regional Environmental Center – Caucasus
SABUKO	Society for Nature Conservation
SNMI	Sustainable Nitrogen Management Index
TEEB	The Economics of Ecosystems and Biodiversity
UN	United Nations
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change
USAID	U.S. Agency for International Development
USD	U.S. dollars
WASH	water, sanitation, and hygiene

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EXECUTIVE SUMMARY

This Biodiversity Analysis (Analysis) has been prepared for USAID/Georgia (the Mission) as they begin the process of updating their Country Development Cooperation Strategy (CDCS), which will cover the period 2020-2025. This Analysis fulfills Foreign Assistance Act (FAA) Section 119, which requires that all USAID Missions address the following:

Country Analysis Requirements. Each country development strategy, statement, or other country plan prepared by USAID shall include an assessment of:

- The actions necessary in that country to conserve biological diversity, and
- The extent to which the actions proposed for support by the Agency meet the needs identified.

USAID best practice guidance further advises that this Analysis provide an overview of the conservation status of biodiversity in Georgia, the stakeholders involved, and a series of recommendations that USAID/Georgia can consider as the new CDCS is developed. It is not expected that the new CDCS will differ substantially from the existing strategy, with a three-pronged focus on democracy and governance, economic growth, and social development. Within these technical areas, there are opportunities available to include biodiversity elements.

Background. Georgia is part of the larger Caucasus ecoregion, recognized as among the richest and most vulnerable in the world in terms of biodiversity. Forty percent of the country is forested, and over nine percent is conserved as protected areas. Georgia is home to a variety of habitats due, in part, to extreme topographic diversity.

Methodology. The Analysis Team conducted a desk study, interviewed over 30 stakeholders, and visited key conservation areas and habitats to assess the direct threats and drivers presented in this report. The direct threats are listed according to priority; drivers are presented without prioritization given that many influence multiple threats.

Priority Threats. Major direct threats to Georgian biodiversity include:

- Infrastructure development (especially hydropower)
- Illegal/ unregulated hunting and fishing
- Illegal/ unregulated logging
- Agricultural practices, including grazing and zoning
- Mining
- Pests, diseases, and invasive species
- Municipal waste /untreated sewage
- Gravel extraction
- Forest fire
- Climate change
- Tourism

Associated Drivers. Drivers behind these threats are factors at the policy, institutional, and economic levels. In Georgia, these include:

- Poor social and economic conditions
- Lack of institutional capacity, prioritization, and human resources for biodiversity
- Lack of environmental awareness
- Unsustainable, non-systematic development
- Lack of environmental data and monitoring
- Lack or mismanagement of government funds
- Legislative gaps and lack of transparency
- Poor coordination among government, bilateral, multilateral, private and NGO actors

Actions Necessary to Address Threats and Drivers. The actions necessary to address these direct threats and drivers are provided in Section 7 and include 41 items derived from literature review, stakeholder consultations, site visits, and the Analysis Team's expertise. Many of these are specific to biodiversity initiatives and should be undertaken by organizations focusing on conservation.

USAID's Role. Some actions necessary could be implemented by USAID/Georgia technical offices that focus on democracy and governance, economic growth, and social development (Sections 8 and 9). Currently, the "extent to which" the Mission addresses the actions necessary for biodiversity conservation is minimal and not targeted:

- Development Objective (DO) 1: Democratic checks and balances and accountable governance enhanced, indirectly addresses some of the drivers by promoting a more informed and engaged citizenry (Intermediate Result [IR] 1.1); ensuring political processes are more deliberative and transparent (IR 1.2); supporting the consistent and professional application of the rule of law (IR 1.3); and increasing transparent, responsive, and effective governance and service delivery (IR 1.4).
- DO 2: Inclusive and sustainable economic growth, indirectly addresses some of the drivers by improving economic governance (IR 2.1); increasing employment generation in targeted sectors (IR 1.2); promoting more responsible management and development of Georgia's natural endowments (IR 1.3); and enhancing the quality of Georgia's workforce (IR 1.4). There is also the possibility of exacerbating some threats and drivers in this DO, potentially through support of agriculture, energy, and tourism projects.
- DO 3: Increasingly stable, integrated, and healthy society indirectly addresses some of the drivers by increasing engagement with and inclusion of targeted populations (IRs 3.1 and 3.2) and promoting a healthy Georgia (IR 3.3).

Recommendations. Based on the findings in this Analysis, 51 recommendations are made for the Mission to address the actions necessary to conserve biodiversity in Georgia. These recommendations are made based on the work of other donors and organizations, an assessment of the comparative advantages of the Mission, and feedback received from USAID staff during the Analysis Team's field visit in-country. These include short-term, long-term, and future considerations; attainable, short-term recommendations based on the current CDCS are provided below.

TABLE 1. RECOMMENDATIONS BASED ON THE CURRENT CDCS	
DEVELOPMENT OBJECTIVES AND INTERMEDIATE RESULTS	ATTAINABLE (SHORT-TERM)
DO 1: DEMOCRATIC CHECKS AND BALANCES AND ACCOUNTABLE GOVERNANCE ENHANCED	
Capacity-building (IR 1.1: A more informed and engaged citizenry and IR 1.2: Political and electoral processes are more competitive, deliberative, and transparent)	Invest in capacity-building activities for government officials at every level to develop new and innovative ideas to address social and economic challenges, especially in rural areas or for vulnerable populations (e.g., job training, community engagement activities support). Integrate environmental impacts knowledge into capacity-building activities for all stakeholders. Provide technical assistance to local governments to better-address environmental concerns, including on environmental compliance and on local policy development or community communications strategies. Incorporate questions about the environment and natural resource management into citizen opinion surveys, focus groups, and other data collection tools and support government management and public dissemination of that information, including an emphasis on the link between natural resources and ecosystem services.
Rule of Law (IR 1.3: Independent, consistent, and professional application of the rule of law)	Support the development and passage of framework legislation that strengthens biodiversity conservation, including existing draft legislation on for water management, soil, seed, wind breaks, and emissions, among others. Strengthen judicial practices related to environmental crime, including by the stepwise implementation of new policies and laws to monitor how actions impact citizen behavior. (This could include pilot programs to manage resources and address corruption.)
Cooperation (IR 1.4: Transparent, responsive, and effective governance and service delivery)	Support international donor and government biodiversity initiatives, especially those that strengthen the developing legal framework.
Monitoring and Mitigation of Development Projects (Cross-cutting)	Support development project environmental monitoring activities, including tracking of mitigation measures throughout project periods of performance. Support efforts to implement and strengthen the Environmental Impact Assessment (EIA) process.
Protected Areas Support (Cross-cutting)	Support APA efforts to collect, share, and manage biodiversity data throughout the protected area system and with the public, including carrying capacity studies. Consider supporting programming that increases funding to APAs, including through entrance and use fee structures, taxes, and eco-vacations where tourists work to clean or otherwise improve the protected areas.

TABLE 1. RECOMMENDATIONS BASED ON THE CURRENT CDCS	
DEVELOPMENT OBJECTIVES AND INTERMEDIATE RESULTS	ATTAINABLE (SHORT-TERM)
DO 2: INCLUSIVE AND SUSTAINABLE ECONOMIC GROWTH	
Development projects (IR 2.1: Improved economic governance and leadership)	Support appropriate EIA and other environmental review of all development projects and ensure that biodiversity is adequately considered during project development. Support the development of management action plans for all types of small and medium enterprise projects, which can chart courses for design, process, and sale of goods and services.
Job creation (IR 2.2: Increased competitiveness and employment generation in targeted sectors and IR 2.4: Quality and market-oriented workforce enhanced.)	Ensure that environmental considerations are not secondary to economic growth objectives in any USAID/Georgia projects. Propagate job opportunities – including 21st century jobs, for example in IT – in both rural and urban areas to reduce reliance on illegal or extractive activities.
Energy (IR 2.3: More responsible management and development of Georgia's natural endowments)	Encourage efforts that improve gasification or renewable energy production, costs, and use in rural areas. Support system-scale planning for nationwide energy development that compares a range of pathways, including different mixes of generation technologies and strategic siting to minimize impacts.
Tourism (IR 2.3: More responsible management and development of Georgia's natural endowments)	Support environmental eco-tourism and sustainably grow Georgia's tourism industry (e.g., through strategic planning for tourism development, especially high-quality experiences, in protected areas and other eco-tourism hotspots).
Agriculture (IR 2.3: More responsible management and development of Georgia's natural endowments)	Provide support to rural communities to put greater value on ecological concerns and sustainable value chains, including through an emphasis on organic certification and relevant sectors in the tourism industry; education campaigns; and funding mechanisms.
DO 3: INCREASINGLY STABLE, INTEGRATED, AND HEALTHY SOCIETY	
Education (IR 3.1: Increased engagement with the occupied territories and IR 3.2: Increased inclusion of target populations)	Integrate conservation education into youth, women, and minority programming and programs that work across the conflict line.
Pollution (IR 3.3: Improved and sustainable health outcomes and decreased incidence of communicable disease)	Continue or grow initiatives that indirectly but positively impact biodiversity (WASH, waste management projects) and demonstrate the link between environmental conservation and a healthy population.

SECTION 1 – INTRODUCTION

1.1 PURPOSE AND SCOPE

This Biodiversity Analysis (Analysis) has been prepared for USAID/Georgia as they begin the process of updating their Country Development Cooperation Strategy (CDCS). Currently the Mission operates under the CDCS for 2013 – 2017, which has been extended through 2020. This Analysis will fulfill Foreign Assistance Act (FAA) Section 119, Endangered Species, as amended, which requires the following:

Each country development strategy statement or other country plan prepared by the Agency for International Development shall include an analysis of:

> (1) The actions necessary in that country to conserve biological diversity; and
>
> (2) The extent to which the actions proposed for support by the Agency meet the needs thus identified.

The Analysis also provides recommendations that inform the Mission's 2020-2025 CDCS.

1.2 BRIEF DESCRIPTION OF THE USAID PROGRAM

This Analysis has been prepared in line with the existing USAID/Georgia program goal and development objectives, with the understanding that the Mission envisions pursuing a similar goal and development objectives under the new CDCS.

The Mission pursues programming in the following technical offices:

- Democracy and Governance
- Economic Growth; and
- Social Development

Technical programming under the CDCS consists of three Development Objectives (DOs), with supporting Intermediate Results (IRs):

TABLE 2. USAID/GEORGIA PROGRAM

GOAL: Strengthen and sustain Georgia's democratic, free-market, Western-oriented transformation	
DEVELOPMENT OBJECTIVE	DESCRIPTION
1. Democratic checks and balances and accountable governance enhanced	IR 1.1: A more informed and engaged citizenry IR 1.2: Political and electoral processes are more competitive, deliberative, and transparent IR 1.3: Independent, consistent, and professional application of the rule of law IR 1.4: Transparent, responsive, and effective governance and service delivery
2. Inclusive and sustainable economic growth	IR 2.1: Improved economic governance and leadership IR 2.2: Increased competitiveness and employment generation in targeted sectors

TABLE 2. USAID/GEORGIA PROGRAM	
GOAL: Strengthen and sustain Georgia's democratic, free-market, Western-oriented transformation	
DEVELOPMENT OBJECTIVE	DESCRIPTION
	IR 2.3: More responsible management and development of Georgia's natural endowments IR 2.4: Quality and market-oriented workforce enhanced
3. Increasingly stable, integrated, and healthy society	IR 3.1: Increased engagement with the occupied territories IR 3.2: Increased inclusion of target populations IR 3.3: Improved and sustainable health outcomes and decreased incidence of communicable disease

1.3 METHODOLOGY

The Analysis Team consists of Elisa Perry (team leader); Paola Bernazzani (biodiversity specialist); Dr. Levan Mumladze (local biodiversity and conservation expert) and Ketevan (Mary Kate) Ugrekhelidze (local interpreter/ document support). Short bios of these team members are presented in Annex B.

Work began in March 2019 with a literature review and desk study; these sources are provided in Annex C. Consultations with Washington, D.C.-based stakeholders occurred in late April and early May 2019. Field work in Georgia was conducted from May 19 to May 31, 2019. While in-country, the team conferred with Mission staff and conducted a series of stakeholder interviews in Tbilisi and at field sites using the interview template provided in Annex D.

Site visits were selected to show a diversity of habitats, biodiversity threats, and protected areas. At all sites, key personnel including managers and staff were interviewed, and an overview of major natural features was conducted as time allowed. Figure 1 shows a map of the itinerary. The sites and organizations visited outside Tbilisi were selected by USAID, represent a diversity of geographies and ecosystems and include:

- Lagodekhi Nature Reserve;
- Borjomi Nature Reserve;
- Kolkheti National Park and Paliastomi Lake; and
- Mtirala National Park.

A debrief and associated workshop were conducted with the Mission on the final day of work in country.

This report has been prepared following the USAID Foreign Assistance Act Sections 118/119 Tropical Forest and Biodiversity Analysis: Best Practices Guide.[1]

[1] USAID. Foreign Assistance Act Sections 118/119 Tropical Forest and Biodiversity Analysis: Best Practices Guide. February 2017. Accessed April 2019.

Figure 1. Map of Georgia with Analysis Team Sites Visited

SECTION 2 – COUNTRY CONTEXT

2.1 LOCATION AND COUNTRY CONTEXT

Georgia, a parliamentary democratic republic in the South Caucasus, has been an independent nation since 1991, when the Soviet Union dissolved. Administratively, Georgia is divided into nine regions and one capital city, Tbilisi.[2] One of the country's western regions, the Autonomous Republic of Adjara, is administered independently. In 2008, Georgia fought a brief, five-day war with Russia, which resulted in the separation of two regions, Abkhazia and South Ossetia, from Georgia.[3]

Georgia has a population of 3.9 million people, with 58.2 percent living in urban settings.[4] Georgia's economy grew by 4.7 percent in 2018; this growth is expected to continue into 2019. Economic growth is largely driven by the export of goods, tourism, private consumption, and investment. Approximately 56 percent of the labor force works in the agricultural sector, many of them in rural settings.[5] Despite economic gains, poverty, which is currently at 26.4 percent, will remain a challenge as production in the agricultural sector has declined in recent years.[6] If not addressed, biodiversity may suffer, as rural poverty contributes to the unsustainable use of resources.[7]

2.2 BIOPHYSICAL SETTING

Georgia lies between latitudes 41°N and 44°N and longitudes 40°E and 47°E with a total area of 69,700 km^2. The country is characterized by its strategic location bordering the Black Sea to the west, the Great Caucasus Mountains to the north, and the Lesser Caucasus Mountains in the south (Annex H, Map 1). It is part of the larger Caucasus ecoregion, recognized as among the richest and most vulnerable in terms of biodiversity.[8] Georgia encompasses a wide variety of climate zones, which range from humid subtropical to permafrost. Near the Black Sea, climate is characterized by mild winters, hot summers, and heavy precipitation. The average annual temperatures in this region are between 9°C and 14°C, and precipitation ranges from 900 millimeters (mm) to 2,300 mm. The mountainous region is cooler with average temperatures between 2°C and 10°C and precipitation between 1,200 mm and 2,000 mm. The far eastern region, including the eastern plains, has a dry subtropical climate in the lowlands. This region has average annual temperatures between 11°C and 13°C and precipitation between 400 mm and 600 mm.[9] Georgia's topography encompasses a wide range of elevations from 0 to 5,193 meters above sea level (masl), with the Shkhara mountain as its highest point (Annex H, Map 2).[10]

[2] Central Intelligence Agency, "Georgia," in The World Factbook 2016-2017 (Washington, DC, 2016), https://www.cia.gov/library/publications/the-world-factbook/geos/gg.html. Accessed April 2019.
[3] Djibladze, Mikhail Leonidovich et al., "Georgia," in Encyclopedia Britannica (January 2019), https://www.britannica.com/place/Georgia. Accessed April 2019.
[4] UNDP, Georgia-Human Development Indices and Indicators: 2018 Statistical Update (2018), http://hdr.undp.org/en/countries/profiles/GEO. Accessed April 2019.
[5] Central Intelligence Agency, "Georgia," in The World Factbook 2016-2017 (Washington, DC, 2016).
[6] World Bank Group. "Georgia," in Europe and Central Asia Macro Poverty Outlook. 2019. http://pubdocs.worldbank.org/en/107191492012467509/mpo-eca.pdf. Accessed April 2019.
[7] Ministry of Environment and Natural Resources, Georgia. National Biodiversity Strategy and Action Plan of Georgia 2014-2020. Tbilisi, May 2014.
[8] Zazanshvili, N. (Ed.). Ecoregion Conservation Plan for the Caucasus. Caucasus Biodiversity Council, 2012.
[9] USAID. Climate Risk Profile: Georgia, Washington, D.C., May 2017.
[10] Central Intelligence Agency, "Georgia," in The World Factbook 2016-2017 (Washington, DC, 2016),

SECTION 3 – STATUS OF GEORGIA'S BIODIVERSITY

Biodiversity refers to the variability of life -- within and among species, ecosystems, or regions — and is a measure of the number, variety, and variations of living entities.[11] Located on the southern slopes of the Great Caucasus Mountain Range, Georgia supports high levels of biodiversity, with approximately 300 species of endemic plants alone.[12] It is listed in two of 35 of the world's biodiversity hotspots (Caucasus and Irano Anatolian).[13] Georgia contains all or part of 31 Important Bird Areas and is within one of World Wildlife Fund's Global 200 Ecoregions selected for irreplaceability or distinctiveness.[14] A National Biodiversity Strategy and Action Plan (NBSAP) of Georgia was written in 2014 for the period of 2014 to 2020.[15]

3.1 MAJOR ECOSYSTEM TYPES AND STATUS

This section will broadly describe forest, aquatic, and other ecosystems and their status. These ecosystems correspond to the NBSAP categories of Forest Ecosystems (Forest), Meadows (Other), Wetlands and Lakes (Freshwater), Black Sea (Marine) and Glaciers (Other).[16]

FOREST

Figure 2. Forest Facts at a Glance

- 85% of Western Georgia is deciduous
- 30% of eastern Georgia is forested
- 50% of western Georgia is forested
- 98% of Georgia's forest are in the mountains
- 73% of forest are above 1000 meters asl
- 78% of forests grow in steep or very steep soils

Georgia is a mountainous country with several distinct forest types and tree species ranging from beech and hornbeam to pine and fir. Georgia itself covers almost 70,000 square kilometers, approximately 40 percent of which is forested (Annex H, Map 3). Forests in Georgia are primarily located within the Caucasus Mixed Forest and Euxine-Colchic broadleaf forest ecoregions (Annex H, Map 4). Western and eastern Georgia are distinctive, with western Georgia characterized as coastal zone–subtropical and eastern Georgia more temperate. Eastern Georgia contains numerous valleys and gorges separated by mountains. Most of the forests in eastern Georgia are deciduous with semi-deserts, steppes, and arid woodlands at lower elevations (i.e., below 600 masl). In the west, many relict and rare species, including the Pitsunda pines, persist. The eastern portion of the country is less forested than the west due to soil and climatic differences between the regions. Coniferous forests are found in the Borjomi Gorge and in the extreme western areas.[17] Of the deciduous species, beech, oak, and hornbeam dominate, followed by maple, alder, linden, aspen, ash, and hazelnut. The only remaining large lowland forests are found in the Alazani Valley, while

[11] World Resources Institute, "2005: Facts on Biodiversity - A summary of the Millennium Ecosystem Assessment Biodiversity Synthesis." https://www.millenniumassessment.org/documents/document.354.aspx.pdf. Accessed April 2019.
[12] IUCN. "Georgia - a Haven for Biodiversity." 7 December 2012. https://www.iucn.org/content/georgia-%E2%80%93-haven-biodiversity. Accessed June 2019.
[13] Myers, N., R.A. Mittermeier, C.G. Mittermeier, G.A.B. da Fonseca, and J. Kent. 2000. Biodiversity hotspots for conservation priorities. Nature (403): 853–858. Published 24 February 2000.
[14] Olson, D. M., and Dinerstein, E. The Global 200: Priority ecoregions for global conservation. Annals of the Missouri Botanical Garden 89(2): 2002, p. 199-224.
[15] Ministry of Environment and Natural Resources, Georgia. National Biodiversity Strategy and Action Plan of Georgia 2014-2020. Tbilisi, May 2014.
[16] Ibid.
[17] Ibid.

the upper Alazani Valley contains rare yew forests – recognized as the oldest tree genus in Europe. Yew forests have become increasingly fragmented and are facing serious decline.[18]

Most forests extend up to approximately 2,500 masl, which is within the upper alpine region of Georgia (Annex H, Map 5). The tree line is considered to be about 2,700 masl above which is the nival zone (2,700 – 3,200 masl).[19] The nival zone is characterized by rocky areas and sparse vegetation with some continuous meadow. Plants in the nival zone are adapted to these harsh conditions including high exposure to sunlight.

With this extreme topographic variation comes a diversity of plants and animals, many of which are endemic to Georgia or the region, including glacier relics. Wild boar, brown bear, and Eurasian lynx are found in Georgia's forests, as are goats, bearded eagles, and black grouse. Over 400 species of birds are known to Georgia. Notable relict and endemic tree species include Strawberry tree, Caucasus rhododendron, Birch-trees of Litvinov, and Caucasian wingnut (all of which are IUCN Red List species).[20]

The status of these forests varies, and many have been over-harvested largely to provide fuel wood or as part of the timber trade. In additional fungal infection, such as box tree fungus, threaten important relict species.[21] Forest fauna is threatened by poaching, climate change, hunting and fragmentation. Climate change is projected to impact forest ecosystems growth, distribution, and pest prevalence.[22] For example, rising temperatures have increased the spread of endemic diseases (such as bark beetle) and contributed to the spread of new diseases, such as box-fungal disease.[23] A map of natural land cover, including several forest types, is found in Annex H, Map 3.

FRESHWATER

Freshwater ecosystems include small streams, large rivers, lakes, wetlands, and estuaries (Annex H, Map 6). There are more than 26,000 rivers, 860 lakes, and 12 reservoirs in Georgia that provide habitat for approximately 80 species of fish, 100 known crustaceans, and more than 60 species of molluscs.[24]

Rivers drain into either the Black Sea to the west or the Caspian Sea in the east. Major rivers in the western basin include the Rioni and the Enguri. Major rivers in the eastern basin include the Mtkvari and its main tributary, the Alazani. The annual runoff of glacier-fed rivers is triple the river runoff of non-glacier fed rivers.[25] Flows of glacier- and snow-fed river basins (e.g., Khrami-Debed and Alazani) are

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[18] Gegechkori, Arnold. Annals of Agrarian Science 16, 2018. p. 170 – 176.

[19] Global Mountain Explorer (GME) K2, 2011. USGS. Available: https://rmgsc.cr.usgs.gov/gme/. Accessed June 2019.

[20] Patarkalashvili, T. "Forest biodiversity of Georgia and endangered plant species." Annals of Agrarian Science. June 29, 2017.

[21] Ibid. p. 350.

[22] Ministry of Environmental Protection and Agriculture of Georgia. Third National Environmental Action Programme of Georgia, 2017-2020. Tbilisi, 2018. http://mepa.gov.ge/En/Files/Download/1605. Accessed April 2019.

[23] USAID. Climate Risk Profile: Georgia, Washington, D.C., May 2017.

[24] Ministry of Environment and Natural Resources, Georgia. National Biodiversity Strategy and Action Plan of Georgia 2014-2020. Tbilisi, May 2014.

[25] Ministry of Environmental Protection and Agriculture of Georgia. Third National Environmental Action Programme of Georgia, 2017-2020. Tbilisi, 2018. http://mepa.gov.ge/En/Files/Download/1605. Accessed April 2019.

sensitive to increasing temperatures, with glacial retreat and melt projected to alter flow seasonally and decrease flows by about 30 and 55 percent, respectively, by 2100.[26]

The Rioni river is a critical spawning area for threatened sturgeon species, with up to six endangered sturgeon species potentially persisting in the Rioni River.[27] The Ponto Caspian region – which includes the Rioni – is considered the global hotspot for sturgeon biodiversity.[28] The Rioni River, the largest river in western Georgia, originates in the southern slopes of the Greater Caucasus where it flows west into Black Sea at the port town of Poti.[29] Water pollution is a problem in the Rioni and in most of Georgia's rivers, as is hydropower development, which fragments rivers and alters riverine habitat.[30]

Swamps and peatlands are common wetland types at various altitudes throughout Georgia. The Kolkheti lowlands, near the shores of the Black Sea, are characterized by a thick layer of river deposits that were formerly swampland. This area has since been drained and built up for agricultural activities, although the Kolkheti lowlands and the Javakheti plateau remain important resources for birds. The Kolkheti lowlands are found within Euxine-Colchic broadleaf forest ecoregion, which encompasses coastal bottomland forest. The Javakheti plateau is within the Eastern Anatolian Montane Steppe Ecoregion (Annex H, Map 4). Water ecosystems in Georgia have been intensively modified and most bogs have been drained and regulated.[31] Invasive cattails (Typha spp) and reeds (Phragmites spp.) are typical vegetation found in these wetland areas, although a variety of other native plant species are found as well.[32]

Georgia also contains a number of natural lakes, as well as reservoirs. The largest lakes (by surface area) are Paravani Lake, Kartsakhi Lake, and Paliastomi Lake. Paliastomi Lake is an important source for eco-tourism.[33] Wetlands and lakes provide stopovers for birds on their annual migration. Over 100 species of migratory birds stopover in Georgia during the winter where they are dependent on wetland habitats such as the Kolkheti lowlands and the Javakheti plateau. A map of the main rivers and lakes in Georgia can be found in Annex H, Map 6.

MARINE

The greater Black Sea Basin is delineated by western Georgia and connects to the Mediterranean Sea through the Bosphoros Strait. The Black Sea itself is an area rich in biodiversity and home to a wide variety of species. It hosts bottlenose dolphins and around 180 species of fish, including tuna, anchovy, herring, mackerel, and white sturgeon. Unfortunately, the ecosystem is threatened by pollution, overfishing (including bycatch), habitat degradation, introduction of invasive species, and climate-driven changes. With dramatically increasing demands for seafood, fish resources have become vulnerable. The

[26] USAID. Climate Risk Profile: Georgia, Washington, D.C., May 2017.
[27] Fauna and Flora International. "Conserving black sea sturgeon in Georgia" project description. https://www.fauna-flora.org/projects/conserving-black-sea-sturgeon-georgia. Accessed April 2019.
[28] World Wildlife Fund report. "Saving sturgeons: a global report on their status and suggested conservation strategy." 2016. http://d2ouvy59p0dg6k.cloudfront.net/downloads/saving_sturgeons_report_on_status_and_suggested_cons__strategy_low_res_may2016.pdf. Accessed: June 2019.
[29] GiZ. Final Project Report: Pilot Testing in the Rioni River Basin Regarding Impacts from Hydropower including the Methodology, Risk Assessment Results, and a Check-List to Review EIA documents. 2017.
[30] USAID. Biodiversity Analysis Update for Georgia: Final Report. December 2009.
[31] Ministry of Environment and Natural Resources, Georgia. National Biodiversity Strategy and Action Plan of Georgia 2014-2020. Tbilisi, May 2014.
[32] USAID. Biodiversity Analysis Update for Georgia: Final Report. December 2009.
[33] Agency of Protected Areas (APA), Government of Georgia. Available: https://apa.gov.ge/en/. Accessed April 2019.

rivers that flow into the Black Sea (Annex H, Map 6) drain areas with extensive agriculture and thus they deliver high levels of nutrients to the sea. These nutrients contribute to eutrophication of the sea, including algal blooms that result in high levels of dead organic matter that consumes oxygen as it decays, leading to hypoxic conditions which can be lethal to aquatic organisms. Invasive alien species, unsustainable and unregulated fishing, and habitat modification also threaten the Black Sea. [34]

OTHER

In addition to forests and aquatic ecosystems, open areas and grasslands such as alpine meadows, semi-arid ecosystems, and lower-lying pasture lands are important for livestock grazing and also as a resource for native ungulates and as a source of unique plant assemblages. Intensive grazing in the alpine zone of the Eastern Caucasus may be limiting feeding resources for chamois, Caucasian tur, and red deer. Georgia's semi-arid ecosystems are also a source of widespread grazing which can lead to land degradation and erosion. Semi-desert and steppe vegetation host important rare plant species such as Eichlerian tulip and Georgian iris. Alpine, arid, and semi-arid natural grasslands are sensitive to climate change – particularly in high mountain areas where species are adapted to low temperatures. Climate change could result in major shifts to plant communities of the alpine and subnival zones.[35] The area of glaciers in Georgia has been reduced by 29 percent over the past 50 years due to rising temperatures[36]; a total loss of glaciers is projected to occur by 2160.[37] Annex H, Map 4 shows steppe areas where many of these open habitats are founds. Alpine meadows are intermixed with forest in the Great and Lesser Caucasus. The subnival and nival zones, including areas of permanent ice, are represented in (Annex H, Map 5).

3.2 SPECIES DIVERSITY AND STATUS

Georgia is rich with biodiversity and maintains a variety of diverse habitats ranging from marine to peatland swamps to alpine meadows. Over 16,000 animal species have been described to date including 110 mammals, 400 birds, 52 reptiles, 12 amphibians, and 84 fish species. There are 4,100 species of vascular plants, 600 of which are endemic to the Caucasus region and 300 are endemic to the country.[38]

Figure 3. Species Status

- 9 threatened mammals
- 14 threatened birds
- 7 threatened reptiles
- 1 threatened amphibian
- 11 threatened fish
- 4 threatened molluscs
- 63 threatened plants

Source: IUCN Red List 2019

Hunting and wildlife trafficking, together with deforestation, result in high levels of pressure on endangered species in Georgia. Many large mammals such as brown bears and wolves persist but some face extreme hunting pressure. Striped hyena – once common – are now extinct. The Persian leopard, also known as

[34] UN Food and Agriculture Organization. The State of Mediterranean and Black Sea Fisheries. General Fisheries Commission for the Mediterranean. Rome. 2018.
[35] Ministry of Environment and Natural Resources, Georgia. National Biodiversity Strategy and Action Plan of Georgia 2014-2020. Tbilisi, May 2014.
[36] Tielidze, Levan G. and Roger D. Wheate. The Greater Caucasus Glacier Inventory (Russia, Georgia, Azerbaijan). The Cryosphere, 12, 2018. p. 81-94. https://pdfs.semanticscholar.org/4e44/c43d94fbffe4700c0c812d02f498d89fbabc.pdf. Accessed June 2019.
[37] Ministry of Environment and Natural Resources, Georgia. Georgia's Intended Nationally Determined Contribution Submission to the UNFCCC. https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Georgia%20First/INDC_of_Georgia.pdf. Accessed June 2019.
[38] IUCN Red List of Threatened Species. https://www.iucnredlist.org/. Accessed April 2019.

the Caucasian leopard, was thought to be extinct but is now believed to persist in mountainous regions. Camera traps in Vashlovani National Park recorded one individual in 2003, but none have been seen since.[39] Georgia contains rare and globally significant populations of ungulates such as the Bezoar goat or wild goat, now found only in isolated populations in Tusheti and Pirikita Khevsureti. The species numbers approximately 300 individuals and is critically endangered as per the Red List of Georgia.[40] The Caspian red deer is one of the easternmost species of red deer, once widespread throughout Georgia, decreased to two isolated populations in the 1990s (in Borjomi-Kharagauli National Park and Lagodekhi Strict Nature Reserve). By some accounts, populations are increasing in protected areas.[41]

Figure 4. Cultivated Plants: Genetic Diversity at a Glance

- 100 major crop types are still found in Georgia
- As many as 350 local species of grain-crops persist
- 479 species of plants in Georgia are wild relatives of ancient plant cultures
- 114 of these species are endemic
- 1200 plant species are used for medicinal purposes

There are 30 species of bats in Georgia, many of which are threatened due to the disturbance of caves, including for tourism. Four bat species are included in the Red List of Georgia. A mixed colony of horseshoe and Geoffrey's bat – once known as the greatest colony in east Georgia – decreased by almost 50 percent over a ten-year period.[42] The Trialeti mountain range and the Iori plateau have particularly diverse bat assemblages.

Georgia contains 31 Important Bird Areas (Annex H Map 7), and 16 IUCN Red List threatened (vulnerable, endangered or critically endangered) birds, including the Egyptian vulture, white-headed duck, and steppe eagle. Georgia also provides a critical bird migration route for species traveling from Europe and Russia to Africa and Asia.

A number of aquatic species (both freshwater and marine) are endangered in Georgia. Overfishing, bycatch, and the effects of widespread agricultural pollution threaten rare marine species, including many of which have global significance and are decreasing throughout Georgia and elsewhere. Among the Black Sea fish, all six species of sturgeon are on the Georgian Red List. Stellate sturgeon, ship sturgeon, Russian sturgeon, and beluga are critically endangered under the IUCN Red List. Sturgeon are migratory. In addition to vulnerabilities due to marine conditions, passage impediments (e.g., from hydropower) eliminate access to breeding habitat and gravel mining and pollution degrade freshwater habitat. Invasive carp and intensive anchovy harvesting threaten native fisheries. Trout are also declining. Over a ten-year period, the number of trout populations in Georgia decreased by 30 percent.[43]

Most taxa beyond birds and mammals are not extensively researched. The IUCN Red List notes that reptiles, fish, mollusks, other invertebrates, plants, fungi, and protists are less well studied.[44]

[39] Butkhuzi, L. Breaking News. Leopard in Georgia. Caucasus Environment, 2 (49 – 51). 2004.
[40] Ministry of Environment and Natural Resources, Georgia. Georgia's Fifth National Report to the Convention on Biological Diversity. 2014. https://www.cbd.int/doc/world/ge/ge-nr-05-en.pdf. Accessed April 2019.
[41] Caucasus Nature Fund, "Caucasus Red Deer Spotted in Tusheti After Decades." August 27, 2014. https://www.caucasus-naturefund.org/caucasian-red-deer-spotted-in-tusheti-after-decades/. Accessed April 2019.
[42] Ministry of Environment and Natural Resources, Georgia. Georgia's Fifth National Report to the Convention on Biological Diversity. 2014. https://www.cbd.int/doc/world/ge/ge-nr-05-en.pdf. Accessed April 2019.
[43] Ibid.
[44] IUCN Red List of Threatened Species. https://www.iucnredlist.org/. Accessed April 2019.

3.3 GENETIC DIVERSITY

Several ancient cultivars are found in Georgia and represent a unique and rich genetic heritage for food and other agriculture. Species include vines, fruits and nuts, wheat, barley, grains, flax, and cultivated grasses. Grains, legumes, fruits, and other crops have been grown in Georgia since the 5th century B.C. Several local species of field crops, vegetables, fruits, and vines are preserved in collections of scientific institutions, such as the Agricultural Institute of Agrarian University.[45] Although more than 500 varieties of grapes have been recorded in Georgia only about 300 still exist in seed banks, live research collections, or in village farms.[46]

Diversity of these local and sometimes ancient cultivated plants is threatened by the introduction of genetically modified crops and other non-local, commercial seed species. Traditional knowledge of these cultivars and their growing requirements is decreasing. Several Georgian universities are working to protect these species – particularly fruits and vines – and planting materials is distributed free of charge.[47]

Georgia is also the origin of a number of domestic animals that are also threatened, in large part due to hybridization. These species include Tushetian and Imeretian sheep, Tushuri horse, several pig breeds, and Megruli horse. Caucasian shepherd dogs, a large dog used to herd sheep and defend them from wolves, were bred in this region for hundreds of years. Georgian mountain cattle, Begrul Red Cattle and Caucasian Tsabla have decreased and are almost extinct. Local bee species are being displaced by the importation of other bee species for honey.[48]

3.4 STATUS AND MANAGEMENT OF PROTECTED AREAS[49]

Protected areas in Georgia comprise over 9 percent of Georgia's territory.[50] The Agency of Protected Areas (APA), a Ministry of the Environmental Protection and Agriculture (MEPA) agency, is responsible for the overall management of Georgia's protected areas. According to current legislation there are 6 categories of protected areas adapted from IUCN categories. These includes 14 Strict Nature Reserve (totaling in 140,672 ha), 11 National Park (349,327 ha), 19 Managed Reserve (59,857 ha), 42 Natural Monument (294,143 ha), and two Protected Landscape (37,708 ha). [51] In addition there are two Ramsar sites designated as Wetlands of International Importance under international convention: the Ispani Mire and the Wetlands of Central Kolkheti, which collectively have a surface area of 34,480 ha.[52] Current Georgian law, policies, and international agreements support the expansion of protected areas.

[45] Ministry of Environment and Natural Resources, Georgia. Georgia's Fifth National Report to the Convention on Biological Diversity. 2014. https://www.cbd.int/doc/world/ge/ge-nr-05-en.pdf. Accessed April 2019.
[46] USAID. Biodiversity Analysis Update for Georgia: Final Report. December 2009.
[47] Ibid.
[48] Ministry of Environment and Natural Resources, Georgia. Georgia's Fifth National Report to the Convention on Biological Diversity. 2014. https://www.cbd.int/doc/world/ge/ge-nr-05-en.pdf. Accessed April 2019.
[49] Agency of Protected Areas (APA), Georgia. https://apa.gov.ge/en. Accessed April 2019.
[50] Ministry of Environment and Natural Resource Protection of Georgia. 2014. Available: https://apa.gov.ge/en/protected-areas. Accessed June 2019.
[51] Legislative Herald of Georgia. Georgian Law on the System of Protected Areas, 2018. https://www.matsne.gov.ge/en/document/view/32968?publication=17. Accessed June 2019.
[52] Convention on Wetlands of International Importance (Ramsar Convention). Georgia country page. https://www.ramsar.org/wetland/georgia. Accessed June 2019.

All protected areas are locally managed by 20 protected areas administrations, which are responsible for general administration, infrastructure and facilities maintenance, revenue collection, patrolling and law enforcement, educational activities, communication with local communities, and tourism. At the end of 2017, total staffing of the protected areas system included 470 people.[53] The APA is funded by the Government of Georgia's (GOG's) central budget as well as by international donors.[54] A table of key protected areas administered by the APA is presented in Annex E, and a map of protected areas can be found in Annex H, Map 8.

Based on interviews with protected areas management and staff, nature protection within the protected areas is generally successful. There are still cases of poaching, illegal logging, or grazing; however, the trend of illegal activities has decreased over the last several years. In addition to the increase of patrolling activities provided by local rangers, recent developments include the improvement of mobile communication systems for staff and the use of a photo trapping system (primarily monitoring large vertebrates) that provide the means to record and prevent illegal activities. Conversely, all protected areas except Strict Nature Reserves are in many cases the subject of anthropogenic activity, including firewood collection and grazing. In most cases no management plans for the protected areas have been developed.

The economic potential of protected areas has not been assessed. However, tourism is one of the most tangible economic benefits provided by protected areas. According to the National Tourism Administration of Georgia is tourism has increased by 33 percent in 2017 compared with the previous year. Overall, there is an ever increasing trend in protected area visitors over the years (from 355,681 to 954,692 between 2013 and 2017) indicating the high economic potential and tourism value of protected areas.[55] It should be noted, however that the yearly expenditures (~13 million Georgian Lari GEL, or approximately 4.6 million U.S. Dollars [USD]) for maintaining protected areas was still three times larger in 2017 compared to total income.[56] Currently, many rural populations are still dependent on the services provided by protected areas (such as firewood, pasturelands, water resource, and food). Section 4 has additional information on the value and economic potential of natural resources in Georgia.

3.5 STATUS AND MANAGEMENT OF KEY NATURAL RESOURCES OUTSIDE PROTECTED AREAS

Table 3 below represents current available information regarding natural land cover outside of protected areas. The protected area GIS layer used to create Annex H, Map 8 was overlaid with the land cover model (Annex H, Map 3) to generate this information.

As shown below, shrubland is relatively well protected, while grasslands, broadleaved and mixed forest are poorly protected. Based on this simple spatial analysis of natural land cover in Georgia over 44,000 square kilometers, or approximately 91 percent, is not protected by an official designation.

[53] UNDP and the Global Environment Facility, "Enhancing financial sustainability of the Protected Area system in Georgia" project document. 2018.
[54] The most recently available figures demonstrate an equal distribution of support from each source. Agency of Protected Areas (APA), Georgia https://apa.gov.ge/en/finansebi/biudjeti. Accessed July 2019.
[55] National Tourism Administration of Georgia. 2017 Statistics. https://gnta.ge/ge/publication/საქართველოს-ტურიზმის-სტა/. Accessed June 2019.
[56] National Statistics Office of Georgia. https://www.geostat.ge/media/13848/Garemo_2017.pdf. Accessed June 2019.

Georgia has committed to increase the area under formal protection to 20 percent over the next eight years and is planning for the enrollment of new and existing protected areas as part of the Emerald Network of Areas of Special Conservation Interest under the Bern Convention (See Section 5 for further information). The World Wildlife Fund - Georgia is initiating an innovative effort that pays landowners outside of protected areas to maintain their habitat for species along identified connectivity corridors. Beyond this, forests and other resources are protected solely by state ownership, lower population densities, and inaccessibility.

TABLE 3. NATURAL LANDCOVER OUTSIDE OF PROTECTED AREAS[57]

NATURAL LAND COVER	AREA OUTSIDE OF PROTECTED AREAS (KM^2)	PROPORTION OF LANDCOVER TYPE OUTSIDE OF PROTECTED AREAS
Grasslands	9,153	99%
Shrublands	1,321	48%
Broadleaved Forests	23,108	92%
Needleleaved Forests	2,423	78%
Mixed Forests	12,299	93%
	48,305	91%

[57] See Annex H, Map 3 and attendant references.

SECTION 4 – VALUE AND ECONOMIC POTENTIAL

4.1 VALUE OF BIODIVERSITY/ ECOSYSTEM SERVICES

Ecosystem services are those values provided to society by the function and processes that take place within nature. Ecosystem services can be classified into three categories: the provisioning of directly utilized resources (environmental goods); non-material cultural services; and regulating services, which provide critical benefits through reliable ecosystem processes. Supporting services underlie the three former categories through long-term horizons and broad scale processes, such as soil creation and nutrient cycling (Figure 5).[58, 59]

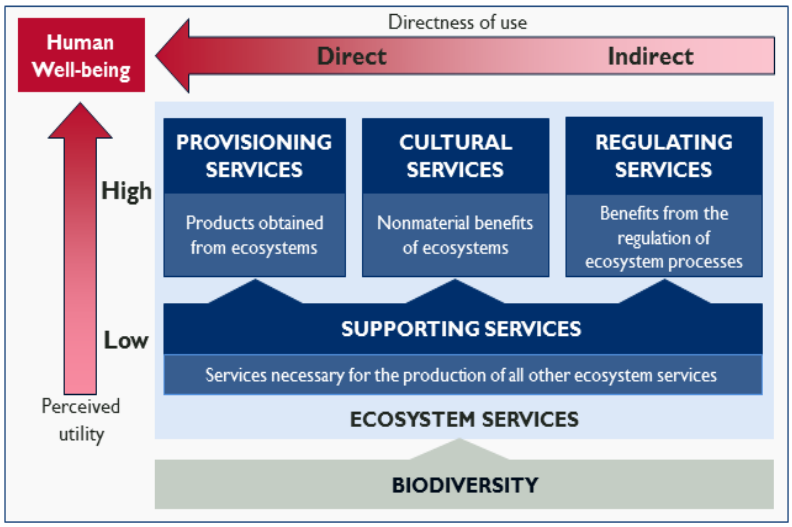

Figure 5. Ecosystem Services.

Biodiversity is critical to the provision and long-term maintenance of these ecosystem services.[60,61] High-biodiversity areas provide over half of the ecosystem services on which the global poor depend, and conservation of those areas has an outsized effect: Conserving only a quarter of the world's high-biodiversity areas could provide approximately 56 percent of the total potential ecosystem goods and service benefits.[62]

4.2 ECOSYSTEM GOODS AND SERVICES

Georgians derive great value from these ecosystems, whether in the form of agricultural production, forestry products, cultural and tourism resources, or regulating services that allow the country's healthy climatic and ecosystem conditions to persist. This section describes some of the key ecosystem goods and services that provide value to Georgia, broken down by the categories of provisioning services, regulating services, and cultural services.

[58] Figure 5 from the Cadmus Group, LLC, 2017, adapted from the Mid-Atlantic Regional Ocean Assessment (Mid-Atlantic Regional Planning Body 2019 citing CEQ 2010).

[59] De Groot, R., B. Fisher, and M. Christie. The Economics of Ecosystems and Biodiversity, Ecological and Economic Foundations. United Nations Environment Programme, Geneva, Switzerland, 2010.

[60] Balvanera, Patricia et al. "Chapter 4: The links between Biodiversity and Ecosystem Services." Routledge Handbook of Ecosystem Services. 1st Ed., pp 45-49. January 2016.

[61] Harrison, Paula et al. "Linkages between biodiversity attributes and ecosystem services: A systematic review." Ecosystem Services 9 (September 2014): 191-203.

[62] Turner, Will et al., "Global Biodiversity Conservation and the Alleviation of Poverty," BioScience 62, no. 1 (2012). p. 85-92.

4.2.1 PROVISIONING SERVICES

Provisioning services arise from the direct use of goods, such as food, fuel, water, timber, non-timber forest products, medicine, and raw materials. Many different ecosystems produce provisioning services, but the focus in this report is on the four dominant sources of provisioning services in Georgia: agricultural production, forests, fisheries and aquaculture, and fresh water.

Agricultural Production

Agricultural production is an important provisioning service for Georgia, which is practiced on roughly 40 percent of the land in the country, or roughly 32,000 sq. km. Endowed with favorable climatic and ecological conditions, Georgia's ecosystem supports the production of a wide range of cultivated food crops. These include varieties of cereals, nuts (e.g., hazelnuts, walnuts), vegetables (e.g., cucumbers, carrots, leafy greens, gourds, and potatoes), fruits and berries (e.g., melons, apples, grapes, cherries, blueberries), and tropical and sub-tropical crops.[63] Agriculture comprised only eight percent of the country's gross domestic product (GDP) in 2017 (down from 9.4 percent in 2013), but accounts for 52 percent of the country's labor, and over 95 percent of farmers in Georgia are self-employed smallholder farmers, typically cultivating approximately one hectare of land. [64,65,66] Georgia is particularly well suited for production of hazelnuts and walnuts, which comprise over 30 percent of overall agricultural exports.[67] In addition, small-scale provisional services, such as beekeeping and small-scale historical subsistence farming, form an important part of Georgia's cultural heritage.[68]

Forests (Timber, Wood Fuel, and Non-Timber Forest Products)

Georgia possesses abundant forest resources, with forests covering roughly 40 percent of the country, or an area of roughly 29,000 sq. km.[69] Forests provide numerous provisioning ecosystem goods and services with Georgia, including timber, wood fuel, non-timber forest products (NTFPs), and medicinal plants. With forests predominantly state-owned and largely under inefficient management systems, the sector contributes only modestly to GDP, with revenues from forest products estimated at only 0.32 percent of GDP in 2012, and 0.4 percent in 2018.[70,71] Rural households in Georgia also often rely

[63] UN Food and Agricultural Organization. "Georgia at a glance" fact page. http://www.fao.org/georgia/fao-in-georgia/georgia-at-a-glance/en/. Accessed April 2019.
[64] National Statistics Office, Georgia. Agriculture page. http://www.geostat.ge/index.php?action=page&p_id=428&lang=eng. Accessed April 2019.
[65] UN Food and Agricultural Organization. "Georgia at a glance" fact page. http://www.fao.org/georgia/fao-in-georgia/georgia-at-a-glance/en/. Accessed April 2019.
[66] The large volume of self-employed small-holder farmers is heavily driven by the lack of economic alternatives available for the majority of rural Georgians.
[67] World Bank Group. "South Caucasus Gender Assessment Technical Assistance Report – Value Chain Assessment." June 2017. http://documents.worldbank.org/curated/en/490611518797391261/pdf/123474-WP-P160432-PUBLIC-ADD-SERIES-ReportValueChainSelectionGeorgia.pdf. Accessed April 2019.
[68] Agency of Protected Areas (APA), Georgia. Visitor Statistics by Years, https://apa.gov.ge/en/statistika/vizitorta-statistika/vizitorta-statistika-wlebis-mixedvit and International Visitors, 2018 https://apa.gov.ge/en/statistika/vizitorta-statistika/2018-wlis-ucxo-qveynis-moqalaqe-vizitorta-pirveli-xuteuli. Accessed April 2019.
[69] World Bank (2015). Georgia: Country Environmental Analysis. Institutional, Economic, and Poverty Aspects of Georgia's Road to Environmental Sustainability. Group Report Number: ACS13945. http://documents.worldbank.org/curated/en/293731468001755898/Georgia-Country-environmental-analysis-institutional-economic-and-poverty-aspects-of-Georgia-s-road-to-environmental-sustainability. Accessed June 2019.
[70] Torchinava, Paata. "Georgia Case Study." Prepared for FAO as part of the State of the World's Forests 2016 (SOFO). http://www.fao.org/3/a-C0181e.pdf. Accessed April 2019.
[71] World Bank Group. "Georgia: Forests, Livelihoods, and Poverty Linkages in the Forest Communities of Georgia - Evidence and recommendations from a 2016 household survey" (translation). March 2018. https://www.profor.info/sites/profor.info/files/Forests%2C%20Livelihoods%2C%20and%20Poverty%20Linkages%20in%20the%20Forest%20Communities%20of%20Georgia%20%20%28in%20English%29.pdf. Accessed April 2019.

heavily on NTFPs, wood fuel, and/or medicinal plants as sources of income or household energy. Recent national surveying showed that 47 percent of rural households derived income from forests—a far greater rate than agriculture (11 percent), livestock (12 percent), wages (26 percent) or self-employment (12 percent). However, calculations on the forestry sector's contribution to GDP do not include NTFPs, wood fuel, or medicinal plants, generally due to lack of available, quality data and weak markets and systems to support formal economic use of, and data collection about, these products.[72,73]

Fisheries and Aquaculture

Current information on the value derived from inland and marine fisheries and aquaculture activities is not generally available. Georgia's commercial marine fisheries were fairly robust between the mid-1960s through 1990, drawing high annual yields of anchovy and sprat from the Black Sea. However, following 1990, the combination of invasive jelly fish (*ctenophore*) and the transition from the state-run industry to a weak and nascent market-based industry led to the collapse of Georgia's commercial fishing. Georgia gained access to the EU for export of marine fishery products starting in 2017, though GeoStat data do not show a noticeable impact on exports of those products in either 2017 or 2018. Freshwater fisheries and aquaculture predominantly focus on Salmonidae (especially rainbow trout), Cyprinidae (multiple carp varieties), and Sturgeon varieties. On the whole, fisheries and aquaculture represent a modest portion of overall agricultural sector production (itself only 8 percent of GDP in 2017).[74]

Fresh Water

Another important provisioning service for Georgia is the supply of fresh water. Georgia can be divided into two main river basin groups: the Black Sea Basin and the Caspian Sea Basin. The Black Sea Basin, which sits in the western part of the country, generates approximately 42.5 cubic kilometers (km^3) per year of internal renewable surface water resources (IRSWR).[75] The Caspian Sea Basin, in eastern Georgia, generates an IRSWR of 14.4 km^3 per year. Currently, approximately two-thirds of Georgians are connected to industrial or municipal water supply; the remainder are unconnected and self-supply. Georgia's freshwater and mineral waters also bring value as an export product, as the sixth highest value export in 2014 at USD 114 million.

In addition to water supply for home use, Georgia's freshwater resources are essential for the country's energy generation, particularly as it continues to move away from dependence on foreign (predominantly Russian) natural gas. As of 2015, Georgia had 2,727 megawatt (MW) of installed hydroelectric power capacity, accounting for 80 percent of overall generation capacity, though seasonal variability in water availability and power demand requires continued importing to offset power deficits.[76]

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[72] World Bank Group. "Georgia: Forests, Livelihoods, and Poverty Linkages in the Forest Communities of Georgia - Evidence and recommendations from a 2016 household survey" (translation). March 2018. https://www.profor.info/sites/profor.info/files/Forests%2C%20Livelihoods%2C%20and%20Poverty%20Linkages%20in%20the%20Forest%20Communities%20of%20Georgia%20%20%28in%20English%29.pdf. Accessed April 2019.
[73] Erkomaishvili, G. "Consumer Market for Mineral Water and Development Policy in Georgia." World Academy of Science, Engineering and Technology International Journal of Economic and Management Engineering. Vol. 9, No. 5, 2015. https://waset.org/publications/10001169/consumer-market-for-mineral-water-and-development-policy-in-georgia. Accessed April 2019. f
[74] National Statistics Office, Georgia. Agriculture page. http://www.geostat.ge/index.php?action=page&p_id=428&lang=eng. Accessed April 2019.
[75] UN Food and Agricultural Organization. AQUASTAT Georgia fact page. http://www.fao.org/nr/water/aquastat/countries_regions/GEO/. Accessed April 2019.
[76] International Hydropower Association. Georgia fact page. https://www.hydropower.org/country-profiles/georgia. Accessed April 2019.

4.2.2 CULTURAL SERVICES

Nature-based tourism is the main cultural ecosystem service in Georgia in terms of revenue and economic opportunities for locals. As of 2018, tourism contributes 33.7 percent of GDP to the total economy of Georgia and contributes to 29.5 percent of total employment. These already significant contributions are expected to increase in future years.[77] Tourism in Georgia relies heavily on the conservation of natural ecosystems. Due to the significant biodiversity and diverse geography, Georgia has the potential to develop a strong nature-based tourism sector, and it is one of the most rapidly developing sectors within the tourism industry. It is estimated that in Tusheti, a region in the mountains, the gross annual income of the local population from nature-based tourism activities is about 1 million USD.[78]

According to the APA, the number of visitors to protected areas has increased significantly between 2013 and 2018, from 355,681 to 1,108,503 visitors, respectively. Protected areas presently cover 9.4 percent of Georgia, with plans for expansion. The top four most visited protected areas in 2018 are the Prometheus Cave, Kazbegi National Park, Martvili Canyon, and Tbilisi National Park.[79] Georgia is ranked third in a list of countries with the fastest growing contribution of travel and tourism to GDP between the years 2011 and 2017. Most of the growth is due to an increase in international tourists.[80] In this period, most international visitors came from Ukraine, Germany, Poland, Israel, and Russia. The total contribution of international tourists made up about 30 percent of the total visitors to protected areas in 2018.[81]

Research on additional cultural ecosystem services in Georgia is scarce.[82]

4.2.3 REGULATING SERVICES

Regulating services include the functions and processes that ecosystems undergo for sustenance and maintenance that provide value to human beings. The forest ecosystems of Georgia provide a wide variety of regulating services. Forests work to prevent soil erosion, mitigate the impacts of extreme events, and help to regulate climate.[83] Forests that grow on the slopes of mountains, such as those in the South Caucasus region, play an integral role in the conservation of soil and water quality.[84] Additionally,

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[77] World Travel & Tourism Council, "Georgia: 2019 Annual Research: Key Highlights," 2019. https://www.wttc.org/-/media/files/reports/economic-impact-research/countries-2019/georgia2019.pdf. Accessed April 2019.
[78] Ministry of Environment and Natural Resources, Georgia. Georgia's Fifth National Report to the Convention on Biological Diversity. 2014. https://www.cbd.int/doc/world/ge/ge-nr-05-en.pdf. Accessed April 2019.
[79] Agency of Protected Areas (APA), Georgia. Visitor Statistics by Years, https://apa.gov.ge/en/statistika/vizitorta-statistika/vizitorta-statistika-wlebis-mixedvit and International Visitors, 2018 https://apa.gov.ge/en/statistika/vizitorta-statistika/2018-wlis-ucxo-qveynis-moqalaqe-vizitorta-pirveli-xuteuli. Accessed April 19.
[80] World Travel & Tourism Council, Travel & Tourism Power and Performance Report, 2018. https://www.wttc.org/-/media/files/reports/2018/power-and-performance-rankings-2018.pdf. Accessed April 2019.
[81] Agency of Protected Areas (APA), Georgia. Visitor Statistics by Years, https://apa.gov.ge/en/statistika/vizitorta-statistika/vizitorta-statistika-wlebis-mixedvit and International Visitors, 2018 https://apa.gov.ge/en/statistika/vizitorta-statistika/2018-wlis-ucxo-qveynis-moqalaqe-vizitorta-pirveli-xuteuli. Accessed April 2019.
[82] Ministry of Environment and Natural Resources, Georgia. Georgia's Fifth National Report to the Convention on Biological Diversity. 2014. https://www.cbd.int/doc/world/ge/ge-nr-05-en.pdf. Accessed April 2019.
[83] Ibid.
[84] UN Economic Commission for Europe and Food and Agricultural Organization of the United Nations. "Forests and Water: Valuation and Payments for Forest Ecosystem Services." 2018. https://www.unece.org/fileadmin/DAM/timber/publications/sp-44-forests-water-web.pdf. Accessed April 2019.

forest ecosystems play a role in regulating air quality, maintaining soil fertility, and regulating pollination.[85]

The water resources of Georgia provide regulating services in a variety of capacities as well. The watersheds in the mountain ecosystems regulate water flow and have a direct impact on the quality and quantity of water that can then be used for other means, such as for hydropower.[86] The wetlands and lakes across the country serve as important reservoirs for fresh water and aid in water quality control. In addition to mitigating soil erosion and regulating water flow, the wetlands and lakes of Georgia, in addition to the Black Sea, help to regulate the global carbon cycle, and therefore the global climate, by means of carbon sequestration.[87]

The interdependent nature of the forest and water ecosystems working in conjunction to provide these regulating services affects the economic value of a key sectors. The Economics of Ecosystems and Biodiversity (TEEB) Initiative is a global effort that aims to provide an effective valuation of natural capital. A scoping study was done in Georgia as a first step in this initiative in 2013. The study focused on the key sectors of energy, tourism, agriculture, mining, and forestry.[88] The initiative is a major step towards the economic valuation of Georgia's ecosystem services, although follow-on work has stalled since 2013 and will be required to complete a full country study.

[85] UNEP and World Wildlife Fund. TEEB Scoping Study for Georgia. United Nations Environment Programme (UNEP), Geneva, Switzerland, 2013. http://doc.teebweb.org/wp-content/uploads/2014/01/TEEB-Scoping-Study-for-Georgia_2013WEB.pdf. Accessed April 2019.
[86] UNEP and World Wildlife Fund. TEEB Scoping Study for Georgia. United Nations Environment Programme (UNEP), Geneva, Switzerland, 2013. http://doc.teebweb.org/wp-content/uploads/2014/01/TEEB-Scoping-Study-for-Georgia_2013WEB.pdf. Accessed April 2019.
[87] Ministry of Environment and Natural Resources, Georgia. National Biodiversity Strategy and Action Plan of Georgia 2014-2020. Tbilisi, May 2014.
[88] UNEP and World Wildlife Fund. TEEB Scoping Study for Georgia. United Nations Environment Programme (UNEP), Geneva, Switzerland, 2013. http://doc.teebweb.org/wp-content/uploads/2014/01/TEEB-Scoping-Study-for-Georgia_2013WEB.pdf. Accessed April 2019.

SECTION 5 – LEGAL FRAMEWORK AFFECTING CONSERVATION

5.1 NATIONAL LAWS AND STRATEGIES

Georgia's legal framework for biodiversity has experienced some significant changes in recent years, most notably the introduction and passage of new legislation and a re-structuring of the government. Increasing attention from lawmakers in updating legislation has been driven mostly by requirements of the EU Association Agreement and associated free trade act. Passage of draft legislation is required to finalize harmonization activities; additional work is also needed on integrating conservation considerations into legislation for other sectors (energy, tourism, etc.) Improved capacity for implementing both legislation and national strategies for biodiversity conservation is needed; Georgia continues to be heavily dependent on international actors and funding for development and implementation of many of its strategies and laws.

New legislation appears to be more comprehensive than laws of previous eras; however, implementation continues to face challenges. The new Environmental Assessment code (known as the Environmental Impact Assessment [EIA] law, passed 2018) is more comprehensive than previous iterations, including introducing a screening and scoping process and re-introducing a two-tier risk classification system.[89] The assessment process still suffers from a "cut and paste" approach to impacts and mitigation measures, a lack of monitoring, and the exemption of some projects (such as mining projects), which have been grandfathered in the less stringent requirements of the previous law.

Many of Georgia's laws related to biodiversity are currently still in draft form, which hinders the implementation of a comprehensive conservation framework. The National Forestry Code (discussed further below) is presently in draft form; the MEPA anticipates that it will be passed by Parliament later in 2019. A draft Biodiversity Code, a draft Code on Soil Degradation, a draft Seed Law, and a draft Code on Wind Breaks are all presently being written by the MEPA. Plans are also underway for a new Water Management Code and a new Emissions Code.[90] A draft Hunting Code was recently under consideration but was scrapped due negative reaction from hunters.

The draft National Forestry Code will provide a new system of forestry management for Georgia and is expected to result in better economic distribution of forest resources. The draft includes a mechanism for conducting inventory, and perhaps most importantly, will limit the "cutting" or illegal logging practices of local communities by making fuelwood distribution the purview of the National Forestry Agency (NFA), the independent agency responsible for forestry management. Under the new law, community members will no longer be able to procure fuelwood from protected areas or other public forest spaces; instead, it will be distributed by the NFA based on market demand. Details of how this effort will be staffed or mechanisms for service to those citizens living in very remote areas are limited.

[89] Legislative Herald of Georgia. Environmental Assessment Code, 2017. https://www.matsne.gov.ge/en/document/view/3691981?publication=2. Accessed June 2019.

[90] In FY 2017, USAID assisted the GOG in finalizing the Low Emissions Development Strategy (LEDS) which charts a plan for Georgia's continued economic growth, while reducing projected greenhouse gas (GHG) emissions in eight major sectors including: energy; buildings; transport; industry (energy use); industrial processes; agriculture; land use, land-use change and forestry (LULUCF); and waste. In FY 2017, the LEDS was formally accepted by the GOG's LEDS Steering Committee and passed to the GOG cabinet of ministers for approval. In late FY 2018, the cabinet of ministers provided comments and requested that the LEDS Steering Committee slightly revise and re-submit the LEDS for final approval. The committee plans to update and resubmit the strategy to the cabinet of ministers in FY 2019.

The draft has been assessed positively by local and international partners. All interviewees for this analysis felt the law's passage was crucial to future biodiversity and forestry conservation in Georgia.

The draft Biodiversity Code focuses on the long-term protection of Georgia's wildlife and habitats. The Code is being drafted by the Biodiversity and Forestry Department in MEPA, along with external experts. It acknowledges the importance of conserving biodiversity and also the relationship between good conservation stewardship and Georgia's development. Provisions of the draft code at this time include protection for certain biodiversity; bringing Georgian law into compliance with international obligations, including the European Union (EU) Association Agreement; and folding the Georgian Red List (which does not possess legal status) into the code.[91] The draft has been distributed to the public, and public forums have been held to help facilitate expert and stakeholder feedback. The draft code will not cover hunting and fishing regulation, which are projected to be covered under a new, as yet not drafted, Wildlife Code. The draft law also does not envision the protection of agricultural crops.

Drafting and implementation of legislation suffers from the lack of capacity and knowledge from those at every Ministerial level. Delays in passing legislation are due to the lack of capacity, the complex nature of requirements under the EU Association Agreement, and the extensive parliamentary and public review process. Some interviewees referenced a lack of transparency around legislative development, which has made it difficult for experts to become involved in the drafting process and to include existing, relevant research data. The legislative drafting process is heavily supported by the international donor community. Enforcement of laws is hampered by a lack of capacity in the government to conduct or review data collection or assessments, low public awareness of legislation, and a lack of adequate policing of legislative violations.[92]

The table in Annex F describes the major national laws and strategies of Georgia related to biodiversity.

5.2 INTERNATIONAL AGREEMENTS

This section summarizes Georgia's major international agreements. Georgia's commitment to international treaties and laws is strong, although the long-term sustainability of implementation measures is not clear given the country's reliance on financial and implementation support from international donors.

The **Bern Convention on the Conservation of European Wildlife and Natural Habitats** (ratified 2009) aims to conserve wild flora and fauna and their natural habitats, as well as to promote European co-operation in this field.[93] Through the Bern Convention, Georgia is part of the Emerald Network of areas of special conservation interest. As of November 2018, there are 39 designated areas

[91] Ministry of Environmental Protection and Agriculture. Draft Law on Biological Diversity (unpublished). 2019.
[92] Draft laws related to biodiversity often require implementing legislation and in certain cases, important mechanisms seem to be excluded (for example, the draft Forestry Code does not address hunting permits.) This further delays both the implementation of the legislation and its impacts.
[93] Bern Convention on the Conservation of European Wildlife and Natural Habitats website. https://www.coe.int/en/web/bern-convention/presentation. Accessed June 2019.

of the Emerald Network in Georgia, with additional areas to be designated under the draft Biodiversity Code.[94]

The **Convention on Biological Diversity** (ratified 1994) focuses on conserving biological diversity; the sustainable use of the components of biological diversity; and the fair and equitable sharing of benefits arising out of utilization of genetic resources. Georgia has committed to achieving the Aichi targets for the Convention by 2024.[95]

The **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)** (acceded 1996) ensures that the international trade in specimens of wild animals does not threaten their survival.[96]

The **Convention on Wetlands (Ramsar)** (acceded 1997) is an intergovernmental treaty that provides the framework for the conservation and wise use of wetlands and their resources. Georgia's two Ramsar sites are the Ispani Mire and the wetlands of Central Kolkheti.[97]

The **EU Association Agreement** (ratified 2014) is a framework agreement that delineates cooperation between the EU and Georgia in the political, trade, social, cultural, and security spheres. It defines eight areas for environmental cooperation and goals to be achieved with a deadline of 2030, including environmental governance and integration of environment into other policy areas; air quality; water quality and resource management, including marine environment; waste management; nature protection; industrial pollution and industrial hazards; chemicals management; and climate action. The agreement includes a Deep and Comprehensive Free Trade Area (DCFTA), which covers multilateral environmental governance and agreements; biological diversity, including trade in natural resource-based products obtained through a sustainable use of biological resources and contributing to the conservation of biodiversity; sustainable management of forests and trade in forest products; and trade in fish products.[98] Georgia is mostly meeting the EU mandated timing targets associated with the Association Agreement.

Georgia is also party to the **United Nations Framework Convention on Climate Change (UNFCCC),** having ratified the Kyoto Protocol in 1999 and the Paris Agreement in 2017**.** As part of their Intended Nationally Determined Contributions (INDC), Georgia has committed to expand its protected areas network to 20 percent of the country (1.394M ha). Georgia has provided two national communications in 2015, anticipating regionally divergent increases in temperature, increases and reductions in precipitation, and increased occurrences of extreme weather events and on observed impacts from climate change, including diseases and pests in forests and vertical shifts in ecosystems and related species.[99] In 2017, Georgia shared a third communication on its INDCs, which included updated

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[94] Bern Convention on the Conservation of European Wildlife and Natural Habitats website. Emerald Network sub-page. https://www.coe.int/en/web/bern-convention/emerald-network and https://rm.coe.int/updated-list-of-officially-adopted-emerald-sites-november-2018-/16808f184d. Accessed June 2019.

[95] Convention on Biological Diversity website. https://www.cbd.int/. Accessed April 2019.

[96] Convention on International Trade in Endangered Species of Wild Flora and Fauna website. https://www.cites.org/eng/. Accessed April 2019.

[97] Convention on Wetlands of International Importance (Ramsar Convention). Georgia country page. https://www.ramsar.org/wetland/georgia. Accessed June 2019.

[98] UNECE, "3rd Environmental Performance Review of Georgia." February 2016. https://www.unece.org/fileadmin/DAM/env/epr/epr_studies/ECE_CEP_177.pdf. Accessed April 2019.

[99] UNECE, "3rd Environmental Performance Review of Georgia." February 2016. https://www.unece.org/fileadmin/DAM/env/epr/epr_studies/ECE_CEP_177.pdf. Accessed April 2019, page 284.

information on the country's progress in reducing greenhouse gas (GHG) emissions, addressing climate adaptation, and addressing impacts to forests.[100]

Georgia is also party to the **European Landscape Convention (ratified 2010)**, **the United Nations Convention to Combat Desertification (1999)**, and **the United Nations Economic Commission for Europe (UNECE) Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention) (2000).**

5.3 GOVERNMENT AGENCIES AND OTHER INSTITUTIONS

The main governmental agency responsible for the environment and biodiversity is the MEPA. It is responsible for the development and implementation of national policy in environmental protection, climate change, air protection, water and land resources management and protection.[101] Specific to biodiversity, it is responsible for the following:

- Biodiversity protection, restoration and monitoring;
- Regulation of biodiversity components (including issuing permits for export, import re-export and introduction of species under CITES);
- General environmental issues; and
- Environmental policy.[102]

This ministry was formed in late 2017 by the merging of the former Ministry of Environment and Natural Resources Protection and the Ministry of Agriculture. This re-structuring was the third major reorganization of the ministry in two years; it was strongly supported by the international community. However, this development has not necessarily resulted in positive changes. Historically, the ministry responsible for environmental protection has not been vested with the same level of responsibility or respect as other ministries. This appears to be continuing under the current structure. In addition, present leadership at the MEPA comes from the agricultural sector; environmental non-governmental organizations (NGOs) have reported that the effect is that agricultural activities take precedence over environmental protection.

Within the Ministry, the Department of Biodiversity and Forestry is tasked with responsibility for all species conservation and oversight of all protected areas. They focus on policy-making, including supporting legislation and strategic policy paper development and adherence to international agreements. The Department of Environment and Climate Change is responsible for numerous areas, including on land degradation, air and water pollution, chemicals management and coordination with international donors; climate responsibilities are mostly focused on setting standards and harmonizing Georgian law with international agreement requirements. The Department of Wildlife Supervision is responsible for wildlife protection and restoration, and secures habitats, preservation and sustainability of species diversity and genetic resources. The APA, another Ministry agency, was established prior to

[100] Ministry of Environment and Natural Resources, Georgia. Georgia's Intended Nationally Determined Contribution Submission to the UNFCCC. https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Georgia%20First/INDC_of_Georgia.pdf. Accessed June 2019.
[101] Ministry of Environmental Protection and Agriculture of Georgia. Regulation Document, Article 2,1, in Georgian, http://mepa.gov.ge/Ge/Files/ViewFile/15506. Accessed June 2019.
[102] UNECE, "3rd Environmental Performance Review of Georgia." February 2016. https://www.unece.org/fileadmin/DAM/env/epr/epr_studies/ECE_CEP_177.pdf. Accessed April 2019, page 148.

the recent re-organization, in 2008. Additional details on this Agency are included in this report in Section 3.[103]

Although there is some coordination among all Ministries in development projects (including working groups organized by the Department of Environment and Climate Change), the MEPA faces challenges in integrating environmental consideration into government decision-making processes. One interviewee described the process as other Ministries designing and developing a particular intervention and then submitting a final plan to the MEPA for approval – instead of integrating that Ministry at the start of project design. For example, the Ministry of Economy is responsible for granting quarry licenses that have been reviewed by the MEPA. However, the process of the MEPA's review is unclear and there is evidence that quarry licenses have been granted in well-known and highly sensitive ecological areas (e.g., in the Rioni River). This approach makes it difficult for the MEPA to raise environmental concerns around a project that has already garnered government support. Capacity as the MEPA is also a concern.

Training at the MEPA appears to be minimal, inconsistent, and dependent on donor support. Qualified staff are often underpaid or underutilized by political appointees, leading to brain drain to the NGO or other sectors. As a result, there is a lack of knowledge of best practice models, approaches, and resources which have demonstrated success elsewhere.[104]

The independent NFA is responsible for the management of all forest resources, which are totally under state ownership except in the Autonomous Adjaran Republic.[105,106] Georgians have long relied on forest resources and management of these vast resources has been difficult. In recent years, the NFA has attempted to reorganize and expand the scope of its responsibilities, with a focus on an organized management strategy and income-generation planning, which included the development of a National Forest Concept in 2013 (as an independent agency, the NFA is one of a few agencies that can collect revenue). The passage of the draft Forestry Code (discussed in Section 5.1); increased coordination with other government agencies, such as the Georgian National Tourism Agency; the institution of an electronic timber tracking system; and leading fuelwood distribution responsibilities under the new law indicate an ambitious agenda and approach.

The community of NGOs is active and well-funded in Georgia, including organizations that are focused on biodiversity and conservation. NGOs in this sphere are mostly financed by international donors and as such, are vocal in critiquing the government's approach to these issues.[107] There is also a breadth of international and regional NGOs with offices in Georgia. These organizations are focused on research and data collection, advocacy, and in some cases, programming and oversight. NGOs also sometimes assist the government in their reporting for international conventions and in the development of strategy documents.

[103] UNDP and the Global Environment Facility, "Enhancing financial sustainability of the Protected Area system in Georgia" project document. 2018.
[104] UNDP and the Global Environment Facility, "Enhancing financial sustainability of the Protected Area system in Georgia" project document. 2018, page 10.
[105] UNECE, "3rd Environmental Performance Review of Georgia." February 2016. https://www.unece.org/fileadmin/DAM/env/epr/epr_studies/ECE_CEP_177.pdf. Accessed April 2019.
[106] The Ministry of Agriculture of Adjara is responsible for the management of forests within that region.
[107] UNECE, "3rd Environmental Performance Review of Georgia." February 2016. https://www.unece.org/fileadmin/DAM/env/epr/epr_studies/ECE_CEP_177.pdf. Accessed April 2019, page 56.

Georgia has a strong university system, including in the sciences. There are a number of academic institutions that provide advanced degrees in biological sciences, ecological studies, and environmental or natural resources management. Capacity at these institutions can be limited, although improvements have been made in recent years. As mentioned, highly qualified graduates tend to enter government service only for a short period of time or not at all, preferring the private and non-profit expertise sectors.

5.4 CONSERVATION INITIATIVES: GAP ANALYSIS

The international donor community's presence in Georgia is active and strong, and their leadership on development initiatives is regularly sought out and supported by the GOG. Regular actors in the conservation space are diverse and numerous, and include Deutsche Gesellschaft für Internationale Zusammenarbeit (GiZ), the Austrian Development Agency, United Nations Development Programme (UNDP), and others. The government relies on these outside actors to propose and support initiatives across many sectors (governance, economic growth, climate, etc.) as they relate to biodiversity conservation; this is consistent with an overall reliance on foreign assistance for development. The sustainability of this approach in the conservation space has been questioned by several expert interviewees, as no plan has been developed to mitigate reliance on foreign assistance over time. Conservation initiatives and implementation of conservation best practices also seem to be heavily motivated by achieving goals outlined in the EU Association Agreement. Georgia's stated commitment to these efforts is consistent, but it is not clear how these standards will be maintained once targets are achieved.

Initiatives funded by donors are mostly at the national level and focus on developing the legal framework and preserving the protected areas. For example, GiZ's Integrated Biodiversity Management, South Caucasus (IBiS) project promotes the development or improvement of biodiversity strategies and regulations, particularly in forest and pasture management, working closely with government actors at the ministerial and parliamentary level.[108] The Global Environmental Fund's (GEF) Enhancing Financial Sustainability of the Protected Area System, implemented by UNDP, supports the operational, technical, and awareness-raising activities in 12 targeted protected areas throughout the country.[109]

The local environmental NGO community focused is similarly active and strong in Georgia. Initiatives supported by these groups are also mostly at the local level and focus on research and education. The growing importance of civil society in a democratic Georgia has allowed this community to be increasingly vocal about concerns. This in turn has improved citizens' awareness of environmental concerns and demands for conservation action from their government.[110] Actors in this space include local organizations Caucasus Environmental NGO Network (CENN), Green Alternative, Centre for Biodiversity Conservation & Research (NACRES), Psovi, Regional Environmental Center – Caucasus (REC Caucasus), and the Society for Nature Conservation (SABUKO), as well as local chapters of international organizations such as Flora and Fauna International and the World Wildlife Fund.

[108] GiZ. Integrated Biodiversity Management South Caucasus page. https://biodivers-southcaucasus.org/. Accessed June 2019.
[109] UNDP and the Global Environment Facility, "Enhancing financial sustainability of the Protected Area system in Georgia" project document. 2018, page 10.
[110] National Democratic Institute. "NDI Poll: Heading into the Presidential Election, Georgians concerned about country's direction, economy, and environment; Dissatisfied with Political Options". August 1, 2018. https://www.ndi.org/sites/default/files/NDI%20Georgia%20poll%20press%20release_%20June%202018_ENG_0.pdf. Accessed June 2019.

There continue to be large capacity development needs across all sectors responsible for biodiversity and conservation, especially in the areas of research and data collection and management. Ministerial staff report a lack of relevant biodiversity data, making policy formation and allocation of resources difficult. Protected Area management staff report collecting biodiversity data, but do not have ready mechanisms or practices for sharing such data throughout the APA or with other relevant agencies. Universities and other researchers also collect data and provide analyses for discrete initiatives but have no easy way to collate, share, or archive information and make it accessible to relevant stakeholders. Poorly construed data are also a problem and can impact other assessments. For example, Georgia's poor results in agriculture in the Yale Environmental Performance Index are related to the use of the Sustainable Nitrogen Management Index (SNMI). However, using SNMI in isolation is problematic as described in expert research.[111] Over-reliance on single metrics, as well as a lack of consideration of recent research, complicate efforts to use scientific information to advance biodiversity conservation.

UNDP is presently supporting the government's biodiversity monitoring system initiative, begun in 2008, and there is an expectation that an online data platform may soon be publicly available. However, it is not clear how relevant NGO and regional actors (e.g., protected area managers and NGOs) will access or make use of such a system or how any additional promulgation will occur. This lack of capacity simultaneously exacerbates reliance on international financial support and restricts access to specific funding opportunities for conservation initiatives.

For a list of on-going conservation initiatives, see Annex G.

[111] A summary description of the importance of improving nitrogen efficiency in crop production and the appropriate use of indices can be found in Zhang, X., Davidson, E.A., Mauzerall, D.L., Searchinger, T.D., Dumas, P., and Shen, Y. Managing nitrogen for sustainable development. Nature 400, 415.3. 2015. http://www.umces.edu/sites/default/files/profiles/files/Ranking%20Method_submit_to_SDSN_SNMI_20160705_0.pdf.

SECTION 6 – THREATS TO BIODIVERSITY

The following tables outlines the major threats and drivers of these threats to biodiversity in Georgia uncovered during the Analysis Team's research. Threats and drivers were adapted based on field visits, additional literature review, and interviews with stakeholders and experts. Note that threats are listed in descending order according to their significance; drivers can be relevant across threats and therefore are not listed in order of significance.

6.1 THREATS TO BIODIVERSITY

TABLE 4. THREATS TO BIODIVERSITY

THREAT	DESCRIPTION
Infrastructure development	Infrastructure development is one of the most significant threats to biodiversity in Georgia. This threat includes development of hydropower, roads, transmission line corridors, and rail lines. The main threat is the fast-growing hydropower sector. At this moment there are dozens of hydropower projects under construction and hundreds planned/signed. The expansion of hydropower threatens freshwater resources as well as anadromous fish. Hydropower dams—including new dams proposed along the Rioni, threaten to further degrade critical habitat for imperiled sturgeon species. In addition, existing dams already trap sediment reducing availability and access to nutrients, which drive aquatic food webs. Widespread small and large hydropower projects throughout Georgia have already decreased connectivity and virtually extirpated critically endangered sturgeon.
Illegal/ unregulated hunting and fishing	Hunting, including bird hunting, is a long-standing cultural tradition in the Caucasus which in the past has not be well-regulated. Hunting licenses are required but infrequently obtained, and hunting laws are difficult to enforce.[112] Hunting is still a popular pastime; but outside of protected areas, there is no strategy to systematically monitor hunting activities. Illegal and unregulated fishing is also a major issue. Illegal fishing (use of illegal gear, out-of-season fishing, use of unregistered vessels, fishing in protected areas) and overexploitation of fisheries are affecting aquatic resources throughout the country, in both freshwater and marine systems. The Black Sea fishery is subject to continued illegal and unsustainable fishing driven in part by a dramatic rise in demand for sea food in recent decades. In addition, a lack of exclusive economic zones (EEZs) results in the sharing of fish stocks among fleets from different countries.[113] Poor management of the fishery and lack of knowledge of

[112] UNDP and the Global Environment Facility, "Enhancing financial sustainability of the Protected Area system in Georgia" project document. 2018.
[113] UN Food and Agriculture Organization. The State of Mediterranean and Black Sea Fisheries. General Fisheries Commission for the Mediterranean. Rome. 2018.

TABLE 4. THREATS TO BIODIVERSITY	
THREAT	DESCRIPTION
	the fishery contribute to the challenge of management. There is a lack of data related to over-harvesting of fish species, although international reports indicate that over-fishing persists.[114] The Department of Wildlife Supervision in MEPA is responsible for regulating hunting and fishing but has insufficient staff to control processes.
Illegal/ unregulated logging	Illegal and unregulated logging contribute to forest loss and fragmentation. In addition, forest logging decreases the resilience of natural habitats and accordingly increases the frequency of natural disaster events (landslides, flooding). Changes in government and ministerial structures have led to some disorder in the forestry sector. Historically, systemic corruption, weak institutional structure, lack of monitoring and control, contradictory legislation, and large-scale unsustainable logging have also contributed to management failures.[115] Some sources report, however, that illegal logging has been reduced over the last ten years, though a large portion of the rural population is dependent on firewood and its production continues to be insufficiently managed (See Section 5). According to the National Statistics Office there is a stable trend in legal and illegal timber harvesting in Georgia (630,462 m^3 and 35,022m^3 respectively).[116] Anecdotal reports suggest illegal logging numbers are much higher; the lack of reliable data complicates addressing this threat. There is no reliable tracking system of forest resource harvesting, and it is impossible to evaluate the extent of forest destruction.[117] There are even some reports of illegal timber production being supported by members of the government.
Agricultural practices, including grazing and zoning	Large herds moving from winter lowland pasturelands towards subalpine summer pasturelands result in overgrazing. Similarly, small herds or individual livestock graze a variety of accessible habitats in Georgia. Overlap exists between areas where shepherds are legally able to graze their livestock and areas where wild ungulates persist. Some governmental efforts are being made to delineate separate zones, but there are many areas where this poses a problem for native species, especially on the edges of protected areas. In a degraded forest, livestock overgrazing grazing is a major problem for forest regeneration.

[114] UNECE, "3rd Environmental Performance Review of Georgia." February 2016. https://www.unece.org/fileadmin/DAM/env/epr/epr_studies/ECE_CEP_177.pdf. Accessed April 2019.
[115] Matcharashvili, I. Problems and Challenges of Forest Governance in Georgia. Association Green Alternative, Tbilisi, 2012. p. 38.
[116] National Statistics Office of Georgia. https://www.geostat.ge/media/13848/Garemo_2017.pdf. Retrieved 21.06.2019
[117] USAID. Biodiversity Analysis Update for Georgia: Georgia Biodiversity Integration Opportunities. May 2012.

TABLE 4. THREATS TO BIODIVERSITY	
THREAT	DESCRIPTION
	In addition, instead of using native stocks, more "modern" seeds (some of which are genetically engineered), are being imported into the country for planting. These alternative crops can improve productivity and/or increase the market value of agriculture products. They nonetheless come at the expense of native varieties.[118] In addition, more and more fields are becoming fallow as people move to the cities, and the remaining native agricultural varieties are being lost.[119] The use of artificial fertilizers and large number of different pesticides is typical. However, there are no data or monitoring schemes in Georgia to obtain information on the effect of chemicals on habitats and species.
Mining	Historical and current manganese, gold, arsenic, clay and limestone mining is common in Georgia. Apart from the direct destruction of natural habitats, mining causes heavy pollution of adjacent areas, primarily of rivers. The most pronounced problems are related to gold mining in Bolnisi and Manganese mining in Chatura. These activities pollute large surrounding areas with heavy metals causing both wildlife and human health problems. There is presently no management practice applied to mining businesses to mitigate and reduce pollutants release.
Pest, diseases, and invasive species	Invasive pests in forests and agriculture can cause significant economic and biodiversity losses. In recent years, significant resources have been dedicated to mitigate the outbreak of the marmorated stink bug (*Halyiomorpha halys*). Marmorated stink bug is not a danger to wildlife *per se*, however, the large amount of general purpose chemicals used to fight it can result in loss of non-target fauna. Native forests face disease, including chestnut fungal disease and box tree moth. The later resulted in an almost 90 percent decrease in native box tree populations during the last decade. The former has caused a relatively slow but continuous reduction of chestnut populations countrywide. In general, there is a large gap in knowledge of invasive species and their effect on biodiversity in Georgia. Only a few research articles have appeared in the last decade reporting the occurrence of few invasive animal species and only one that covers potential economic impacts. [120] There is no recent locally-sourced information or database

[118] For more information on this topic, please see Akhalkatsi, Maia et al., Diversity and Genetic Erosion of Ancient Crops and Wild Relatives of Agricultural cultivars for Food: Implications for Nature Conservation in Georgia (Caucasus). Perspectives on Nature Conservation, February 2012: https://www.intechopen.com/books/perspectives-on-nature-conservation-patterns-pressures-and-prospects/diversity-and-genetic-erosion-of-ancient-crops-and-wild-relatives-of-agricultural-cultivars-for-food. Accessed July 2019.
[119] USAID. Biodiversity Analysis Update for Georgia: Georgia Biodiversity Integration Opportunities. May 2012.
[120] Kikodze, D., Memiadze, N., Kharazishvili, D., Manvelidze, Z., & Müller-Schärer, H. The alien flora of Georgia. Joint SNSF SCOPES and FOEN publication, 2010.

TABLE 4. THREATS TO BIODIVERSITY	
THREAT	DESCRIPTION
	available on invasive alien species diversity, distribution, or ecological/economic consequences.[121]
Municipal waste /untreated sewage	Much of the municipal and agricultural waste, including human sewage, is released directly to Georgia's rivers and then to the Black Sea or via the Mingachevir Reservoir, which acts as a settling pond for wastewater. As of 2013, 70 percent of the population is connected to sewers, but treatment plants have not been updated since the Soviet period. One modern wastewater treatment facility is in operation in Batumi, but presently, most municipalities (including the capital, Tbilisi) do not have properly working waste water/ sewage treatment facilities.[122] With poor infrastructure for waste disposal, and increased development, unprecedented waste is entering rivers, lakes and the Black Sea.
Gravel extraction	Gravel extraction – or sand mining - entails the removal of sediment from a river bank, bar, or channel by dredging. These materials are used for concrete and other construction materials and so are in high demand in rapidly developing parts of the world.[123] This activity can have direct impacts on habitat (physical removal and disruption of channel morphology) and water quality. Removal of large volumes of sediment from a river reach can result in channel destabilization and bank erosion and collapse.[124] Further, the removal of sediment depletes the total sediment supply available to be transported to downstream habitats which benefit from sediment deposition, including floodplains and deltas.[125] Due to accelerated infrastructural development, gravel extraction (mainly from river beds) is extensive. The destruction of river communities and increasing river turbulence threatens freshwater biodiversity, though again, there are no substantive data available to evaluate the trends and effects.
Forest fire	Forest fire has become more frequent in recent years and can destroy natural habitats. This is particularly evident in eastern Georgia, which is characterized by a drier climate. Based on interviews, forest fire is usually the result of irresponsible human activity during leisure or while working in forests. Incidences of fire are often human-caused - however, extended and more extreme dry periods (exacerbated by climate change) increase the number, extent, and intensity of fire.

[121] There is the Global Invasive Species Database which has information on 88 species of invasive species in Georgia (http://www.iucngisd.org/gisd/search.php). Locally-sourced information would be preferable as it would be more accurate and up-to-date.
[122] European Union Water Initiative, Georgia: National Water Policy Dialogue on Integrated Water Resources Management report. Tbilisi, 2013. http://www.syke.fi/download/noname/%7B8CB20E57-CFAC-442F-AB08-A5132C337E99%7D/102943. Accessed April 2019.
[123] Torres, A., J. Brandt, K. Lear, and J. Liu. A looming tragedy of the sand commons. Science 357 (6355). p. 970-971.
[124] Padmalal, D., K. Maya, S. Sreebha, and R. Sreeja. Environmental Geology 54(4), 2008. p. 879-889.
[125] Koehnken, L. and M. Rintoul. 2018. Impacts of Sand Mining on Ecosystem Structure, Process and Biodiversity in Rivers. WWF. http://d2ouvy59p0dg6k.cloudfront.net/downloads/sand_mining_impacts_on_world_rivers__final_.pdf. Accessed May 2019.

TABLE 4. THREATS TO BIODIVERSITY	
THREAT	DESCRIPTION
Climate change	Climate change represents a significant threat to biodiversity in Georgia. Georgia is already experiencing increases in temperature, changes in precipitation amount and seasonality, and increases in rainfall intensity- that have resulted in a variety of impacts to natural resources, flora and fauna.[126,127,128,129,130] Georgia experiences a range of climate-related hazards, including floods, flashfloods, mudflows, rainfall-triggered landslides, droughts, extreme heat, fire, hail, wind storms, and avalanches.[131] Climate change is expected to accelerate temperature increases and changes in intensity of extreme precipitation events. Impacts on biodiversity could include acute impacts due to extreme heat stress on species or habitats, or vegetation/ecosystem shifts. Semi-arid regions in Eastern Georgia are under the threat of desertification due to decreased rainfall and enhanced evaporation; while the growth and productivity of forests have been declining due to rising temperatures, changes in precipitation patterns, reduced water availability, forest fires, pests and diseases.[132] The susceptibility of areas of high conservation value to invasive species is expected to increase, as a warming climate shifts the habitat suitability of invasive towards eastern Georgia and higher altitudes.[133] In addition, the area of glaciers in Georgia has been reduced by 29 percent over the past 50 years due to rising temperatures. Changes in the amount and seasonality of runoff due to glacial melt may impact hydrological flows and seasonal availability of water for fish and other aquatic species while increases in freshwater and salt water temperatures have important implications for the health and sustainability of fish species.[134] For example, increasing temperatures in freshwater streams have resulted in trout migration upstream towards cooler waters (i.e. the river head), where space and nutrients are more limited than in the tail race of the river.[135]

[126] Ministry of Environment and Natural Resources, Georgia. Georgia's Fifth National Report to the Convention on Biological Diversity. 2014. https://www.cbd.int/doc/world/ge/ge-nr-05-en.pdf. Accessed April 2019.
[127] UNDP. Climate Change Adaptation in Europe and Central Asia. November 2018. https://www.undp.org/content/undp/en/home/librarypage/climate-and-disaster-resilience-/climate-change-adaptation-in-europe-and-central-asia.html. Accessed June 2018.
[128] USAID. Climate Risk Profile: Georgia, Washington, D.C., May 2017.
[129] Ministry of Environmental Protection and Agriculture of Georgia. Third National Environmental Action Programme of Georgia, 2017-2020. Tbilisi, 2018. http://mepa.gov.ge/En/Files/Download/1605. Accessed April 2019.
[130] Elizbarashvili et al. Georgian climate change under global warming conditions. Annals of Agrarian Science 15, 2017. p. 17-25.
[131] UNDP. Climate Change Adaptation in Europe and Central Asia. November 2018. https://www.undp.org/content/undp/en/home/librarypage/climate-and-disaster-resilience-/climate-change-adaptation-in-europe-and-central-asia.html. Accessed June 2018.
[132] Ministry of Environment and Natural Resources, Georgia. Georgia's Fifth National Report to the Convention on Biological Diversity. 2014. https://www.cbd.int/doc/world/ge/ge-nr-05-en.pdf. Accessed April 2019.
[133] Slodowicz, D., Descombes, P., Kikodze, D., Broennimann, O., Müller-Schärer, H. 2018. Areas of high conservation value at risk by plant invaders in Georgia under climate change. Ecology and Evolution, 8, 2018. p. 4431–4442.
[134] Tielidze, Levan G. and Roger D. Wheate. The Greater Caucasus Glacier Inventory (Russia, Georgia, Azerbaijan). The Cryosphere, 12, 2018. p. 81-94. https://pdfs.semanticscholar.org/4e44/c43d94fbffe4700c0c812d02f498d89fbabc.pdf. Accessed June 2019.
[135] Ministry of Environmental Protection and Agriculture of Georgia. Third National Environmental Action Programme of Georgia, 2017-2020. Tbilisi, 2018. http://mepa.gov.ge/En/Files/Download/1605. Accessed April 2019.

TABLE 4. THREATS TO BIODIVERSITY	
THREAT	DESCRIPTION
Unregulated tourism	Tourism can also be considered as a direct threat to biodiversity through multiple influences (visual disturbance and noise, littering, infrastructural development, etc.). Although the number of tourists in Georgia is increasing rapidly, it is difficult to determine the specific impacts as no studies or carrying capacity of any touristic areas has been evaluated. In a few protected areas (such as Mtirala National Park), the administration representatives have declared that the number of tourists the park receives each year, is already too difficult to properly manage. Protected areas are still lacking tourism infrastructure, and other touristic areas of the country are even further behind.

6.2 DRIVERS OF THREATS

TABLE 5. DRIVERS OF THREATS	
DRIVER	DESCRIPTION
Poor social and economic conditions	A great deal of Georgia's rural population as well as most urban residents still live in poverty. Based on official statistics in 2018, the average per person monthly income does not exceed 761 GEL in urban areas and 427 GEL in rural areas (255 and 143 USD, respectively).[136, 137] Due to a lack of job availability (especially in rural areas), people search for alternative (frequently illegal) ways to make additional income (for instance timber production, fishing. Lack of access to labor markets impacts Georgia's poor and exacerbates issues related to biodiversity. The rural poor have limited options and are liable to exploit forest products and wildlife for their own use and for external markets. As an example, interviewees noted that, in many rural areas where gasification has already occurred, Georgians still avoid paying for it in favor of using nearby available firewood. Women, ethnic and religious minorities, and youth also suffer a lack of educational and economic opportunities (again, especially in rural areas) and can suffer discrimination and low representation in the government and civil society.
Lack of institutional capacity, prioritization, and human resources for biodiversity	The lack of capacity is notable at all levels and all areas related to biodiversity. In government institutions (e.g., protected area administrations), there are not enough properly qualified staff and decision makers. This is also true for local government officials (e.g., park rangers). The lack of ongoing professional education and training is

[136] National Statistics Office, Georgia. Household income page. https://www.geostat.ge/en/modules/categories/50/households-income. Accessed June 2019.

[137] The international exchange standard is available at www.oanda.com. The average rate of exchange the month of July 2019 is 2.85.

TABLE 5. DRIVERS OF THREATS	
DRIVER	DESCRIPTION
	notable. Within governmental bodies, there is frequent shifting of political appointees and top management, which prohibits strategic thinking and developmental stability. Due to general lack of professional expertise, the same persons or organizations within the private sector and NGOs are frequently working as environmental advocates and developer consultants simultaneously. There are cases when the environmental activities are planned, executed, and overseen/regulated by the same persons or institutions. Due to lack of expertise and strategic vision, governmental strategies are more a wish-list rather than the specific activities driving to the measurable results (for instance, no single objective in the National Biodiversity Strategy and Action Plans developed in 2005-2010 and 2014-2020, have been achieved completely). The governmental approach is more opportunistic (any possible project is welcome), which limits sustainable outcomes. There is a strong lack of infrastructural/knowledge/human power capacity in the academic sector, which is a significant obstacle to describe and monitor biodiversity in the country. Most of the information on which decision makers are operating is outdated and unreliable. Even newly generated, accurate information sourced from academic institutions or reputable research organizations, however, is difficult for governmental agencies to access and understand.
Lack of environmental awareness	Poor knowledge of environmental issues combined with a lack of understanding of the value of natural resources causes unsustainable consumption, limits governance, and increases conflict between authorities and those looking to exploit forest resources. This lack of understanding includes how to sustainably manage agriculture, the value of green fuel wood vs. dry, knowledge of invasive species, the importance of species diversity, and the overall value of natural resources. A lack of dynamic and evolving data systems on biodiversity, including a comprehensive monitoring system, is a significant obstacle to strategic environmental planning and education. Environmental awareness is not widely taught through the primary school system resulting in the undervaluing of natural resources over the long term.
Unsustainable, non-systematic development	Politically-appointed government officials responsible for strategic planning and sustainable development often lack technical knowledge; their roles often change frequently. Strategic planning is generally lacking. For instance, sustainable tourism development is one of the country's top priorities but there is no vision/strategy its development.

TABLE 5. DRIVERS OF THREATS	
DRIVER	DESCRIPTION
	There are also no governing processes for systematic development of Georgia's resources. Roads, transmission lines, and energy projects, particularly for hydropower but more recently for wind and solar, occur without any systematic planning. From an economic perspective, short-term drivers govern decision making rather than long-term strategies, including those that protect biodiversity. Stakeholders interviewed by the Analysis Team agree that, pervasively, the current EIA process is of very low quality with little or no follow-up to ensure that recommended environmental safeguards (e.g., hydrological flow releases from dams or fish ladders) are in place.
Lack of environmental data and monitoring	A deficiency in environmental data (including fine-scale species diversity, population trends, forest cover, environmental variables and dynamics) makes it impossible to judge or evaluate biodiversity changes that have occurred or are ongoing. Due to the lack of good local data, all EIA documents are almost exclusively based on outdated information or information from international sources. Species-level information in new Protected Areas is also based on these outdated data. Even the Georgian Red List of species (adopted in 2006) is almost entirely based on Soviet Union Red Book Data published in 1982. The widely cited statistic of 40% forest cover has been popular in Georgia since the early 20th century, even though deforestation is considered to be a persisting issue. Previous assessments have indicated that the government does not possess the scientific data on natural resources and biodiversity necessary for proper management. This is despite the availability of growing third-party tools and websites (including GIS data and other tracking methods) which can provide relevant information at a relatively low cost. Not surprisingly, until now there has been no system to collect scattered inventory data published by researchers. Supported by UNDP, the Georgian government has been working on a unified biodiversity information platform for years. However, these platforms/databases are not yet readily available and limited capacity to monitor biodiversity changes persists.
Lack or mismanagement of government funds	Until today, only a handful of protected areas have developed management plans funded by international donors. Similarly, there are few conservation action plans for large animal species such as the Caucasian tur. The development and implementation of these management plans for species or habitats are expensive and rely entirely on donations. There is no governmental budget dedicated to development of these plans. The same issues apply to other areas. In general, there are very low salaries within the lower branches of

TABLE 5. DRIVERS OF THREATS	
DRIVER	DESCRIPTION
	management for Protected Areas. Since tourism is prioritized, international funds are dedicated to developing scattered touristic infrastructure such as guest houses and hotels, while species protection or other environmental considerations are either a lower priority or ignored.
Legislative gaps and lack of transparency	Gaps in legislation make projects under a certain size threshold exempt from environmental compliance requirements. Some activities (for instance gravel and sand mining) are similarly exempt from environmental compliance considerations, regardless of size. In addition, historically approved projects have no legal compliance requirements. Major draft codes (forest, biodiversity, etc.) are considered to be "better than previous regimes" but are still under development and not comprehensive. Efforts to manage energy distribution has been poor or incomplete. Gasification is expensive, and the rural population continues to rely on firewood which is obtained in certain areas using a ticket system. The system has proven vulnerable to illegal trade or abuse. Although there are some laws regulating hunting, fishing, and poaching, lawbreakers are not appropriately punished.
Poor coordination among government, bilateral, multilateral, private and NGO actors	There have been recent changes to the ministries and agencies responsible for biodiversity, energy usage, and other environmental or resource sectors. However, these changes have not clarified roles and responsibilities, and public information continues to be widely unavailable. A lack of funding devoted to conservation and climate considerations exacerbates threats posed in these areas. A recent merging of the Ministry of Environmental Protection and the Ministry of Agriculture poses a significant issue since agricultural development and nature protection can have competing interests. The international community, a significant actor in terms of funding and programming, has not been effectively coordinating on biodiversity or environmental concerns. Frequently, the same interventions have been implemented independently, or implementation of development activities has occurred at cross-purposes. There is a gap between government agencies and biodiversity research units in terms of information exchange and cooperation. Research units, NGOs, and government agencies compete over funding for biodiversity-related projects. As a result, data sharing and joint activities only occur when mutual financial benefits are expected.

SECTION 7 – ACTIONS TO CONSERVE BIODIVERSITY

The actions necessary to conserve biodiversity in Georgia have been derived from document study, stakeholder interviews, site visits, and the expert judgement of the Analysis Team. These actions all relate to the drivers and direct threats discussed in detail in Section 6. Actions necessary are directed at all stakeholders operating in country and have been grouped by sub-headings for clarity. As is evident in Table 6 below, most of the direct threats result from multiple drivers.

TABLE 6. ACTIONS NECESSARY TO CONSERVE BIODIVERSITY IN GEORGIA AND LINKS TO DIRECT THREATS AND DRIVERS

DRIVERS/ INDIRECT THREATS	LINKS TO DIRECT THREATS	ACTIONS NECESSARY
Poor social and economic conditions	Illegal/unregulated hunting and fishing Illegal/unregulated logging Agricultural practices, including grazing and zoning	**Government effectiveness:** Strengthen effective governance, including around protections and budget management, so that a portion of income generated from protected areas and other natural resources can be redistributed to local communities, including activities that would stimulate local economic growth and for local protected areas administration Support the NFA in nationwide distribution of fuelwood, per the new draft Forestry Code and given economic demand **Economic capacity-building**: Support sustainable livelihoods / income-generating activities for local citizens near protected areas to provide services, food, and goods to visitors Provide training and opportunities to sustainably harvest, process, and market products derived from nature **Civil society development:**

TABLE 6. ACTIONS NECESSARY TO CONSERVE BIODIVERSITY IN GEORGIA AND LINKS TO DIRECT THREATS AND DRIVERS		
DRIVERS/ INDIRECT THREATS	LINKS TO DIRECT THREATS	ACTIONS NECESSARY
		Support research into positive biodiversity impacts and consequences of biodiversity loss on women and ethnic or religious minorities Support research into the relationships among local poverty, misuse of biodiversity resources and conflict
Lack of institutional capacity, prioritization, and human resources for biodiversity	Infrastructure projects Illegal/unregulated hunting and fishing Illegal/unregulated logging Agricultural practices, including grazing and zoning Pests, diseases, and invasive species Municipal waste/ untreated sewage Unregulated tourism	**Government effectiveness:** Increase investment in the MEPA and NFA in terms of staff numbers and technical expertise, especially in developing planning strategies Improve awareness in law enforcement agencies about existing national and international biodiversity laws Strengthen judiciary practices related to wildlife and environmental crimes Make penalties for wildlife and environmental crimes commensurate with negative impacts Support decentralization efforts that educate and empower local authorities to manage conservation efforts and budgets Improve government fundraising and budget management skills so as to decrease dependence on

TABLE 6. ACTIONS NECESSARY TO CONSERVE BIODIVERSITY IN GEORGIA AND LINKS TO DIRECT THREATS AND DRIVERS		
DRIVERS/ INDIRECT THREATS	LINKS TO DIRECT THREATS	ACTIONS NECESSARY
		international organizations or donors Increase prioritization of biodiversity conservation in government and donor environmental funding
Lack of environmental awareness	Infrastructure projects Illegal/unregulated hunting and fishing Illegal/unregulated logging Agricultural practices, including grazing and zoning Mining Pests, diseases, and invasive species Municipal waste/ untreated sewage Gravel extraction Climate Change Unregulated tourism	**Civil society development:** Raise citizen awareness and knowledge of their rights, penalties for infractions, and the roles and responsibilities of law enforcement around biodiversity and natural resource management Expand efforts to understand citizen perspectives and/or concerns regarding environmental management and biodiversity conservation Improve the capacity of local NGOs to do public awareness campaigns and share lessons learned **Economic capacity-building:** Increase opportunities and funding for scientists to work on and students to study biodiversity conservation activities Support ecosystem valuation studies and distribute the results to officials and the public **Education:**

TABLE 6. ACTIONS NECESSARY TO CONSERVE BIODIVERSITY IN GEORGIA AND LINKS TO DIRECT THREATS AND DRIVERS		
DRIVERS/ INDIRECT THREATS	LINKS TO DIRECT THREATS	ACTIONS NECESSARY
		Improve quality of primary, secondary, and university-level education on the importance of environmental management, the interrelation between environmental management and conservation and improved livelihoods, and sustainable resource management and use Enhance links between government, NGOs, and educational/research institutions towards concerted work in public awareness of biodiversity
Unsustainable, non-systematic development	Infrastructure projects Agricultural practices, including grazing and zoning Mining Gravel extraction Unregulated tourism	**Government effectiveness:** Support system-scale planning for nationwide energy development that compares a range of pathways, including different mixes of generation technologies and strategic siting to minimize impacts Ensure development projects are undertaken with appropriate environmental and climate data analysis prior to the start of work Ensure that biodiversity concerns are incorporated into development and spatial planning at the local, regional and national levels, and that these plans are implemented Ensure national ministries responsible for development projects solicit and receive early and systematized input from the

TABLE 6. ACTIONS NECESSARY TO CONSERVE BIODIVERSITY IN GEORGIA AND LINKS TO DIRECT THREATS AND DRIVERS		
DRIVERS/ INDIRECT THREATS	LINKS TO DIRECT THREATS	ACTIONS NECESSARY
		MEPA, in line with the letter and spirit of Georgian law **Economic capacity-building:** Ensure development projects are undertaken with appropriate environmental and climate data analysis prior to the start of work Target infrastructure (including hydro), extractive, and agricultural sectors for sensitization and collaboration in protecting biodiversity and forests around their operations Improve agricultural practices to limit overgrazing and increase productivity, including limiting the use of pesticides and chemicals and improving crop production best practices
Lack of environmental data and monitoring	Infrastructure projects Illegal/unregulated hunting and fishing Illegal/unregulated logging Agricultural practices, including grazing and zoning Pests, diseases, and invasive species Mining Gravel extraction Climate change	**Government effectiveness:** Apply international standards for storing and managing biodiversity data Integrate biodiversity data from NGOs, civil society organizations, and/or academic institutions and consider their recommendations with respect to existing GOG biodiversity monitoring system efforts Increase funding and human resource capacity to undertake more systematic monitoring of

TABLE 6. ACTIONS NECESSARY TO CONSERVE BIODIVERSITY IN GEORGIA AND LINKS TO DIRECT THREATS AND DRIVERS		
DRIVERS/ INDIRECT THREATS	LINKS TO DIRECT THREATS	ACTIONS NECESSARY
	Unregulated tourism	natural or biodiversity resources outside of protected areas Provide more funding, equipment, and updated technology for monitoring biodiversity conservation activities **Economic capacity-building:** Support projects that inventory species and ecosystems, especially around infrastructure development projects Support solutions that protect species and ecosystems threatened by climate change (e.g., targeting protection of high-elevation areas where vegetation and species may shift as temperatures warm)
Lack or mismanagement of government funds	Infrastructure projects Illegal/unregulated hunting and fishing Illegal/unregulated logging Mining Municipal waste/ untreated sewage Gravel extraction Unregulated tourism	**Government effectiveness:** Support development planning efforts to integrate local input into project development planning and hand-over to local authorities or communities following implementation Pay civil servant salaries (e.g., park rangers, environmental managers, government researchers) that allow them to focus on their occupation and not need to engage in other business and illegal practices Improve capacity of government officials/ staff in effective financial management

TABLE 6. ACTIONS NECESSARY TO CONSERVE BIODIVERSITY IN GEORGIA AND LINKS TO DIRECT THREATS AND DRIVERS		
DRIVERS/ INDIRECT THREATS	LINKS TO DIRECT THREATS	ACTIONS NECESSARY
Legislative gaps and lack of transparency	Infrastructure projects Illegal/ unregulated hunting and fishing Illegal/ unregulated logging Agricultural practices, including grazing and zoning Mining Municipal waste /untreated sewage Gravel extraction Unregulated tourism	**Government effectiveness:** Support the final passage of draft laws related to environment and conservation and any additional mechanisms required for enforcement Tie national and local legislative progress to international agreement requirements to motivate compliance **Civil society development:** Support the publication of draft conservation laws and public forums to solicit commentary and feedback
Poor coordination among government, bilateral, multilateral, private and NGO actors	Infrastructure projects especially hydropower Agricultural practices, including grazing and zoning Mining Gravel extraction Unregulated tourism	**Government effectiveness:** Improve communications among development actors on issues of biodiversity and conservation **Civil society development:** Encourage more exchange of information and best practices within and across sectors **Economic capacity-building:** Ensure biodiversity and conservation concerns are addressed in development projects

SECTION 8 – "EXTENT TO WHICH" USAID CONTRIBUTES TO ACTIONS NECESSARY

The following sections identify the extent to which USAID/Georgia meets the actions necessary to conserve biodiversity (Table 7) with respect to the most recent DOs described in the current CDCS (2012-2020). Information from the technical USAID documents, consultations, and interviews were also used.

To increase readability and to reduce table size, the DOs and intermediate results IRs and their associated sub purposes are not spelled out below. The DOs and IRs are described in Section 1.2, *Brief Description of the USAID Program*.

TABLE 7. "EXTENT TO WHICH" USAID CONTRIBUTES TO ACTIONS NECESSARY

ACTIONS NECESSARY TO ACHIEVE BIODIVERSITY CONSERVATION	EXTENT TO WHICH THE CURRENT CDCS AND ACTIVITIES CONTRIBUTE TOWARD ACTIONS NECESSARY
DRIVER: POOR SOCIAL AND ECONOMIC CONDITIONS	
Improve government effectiveness • Strengthen effective governance, including budget management, so that a portion of income generated from protected areas and other natural resources can be redistributed to local communities • Support the NFA in nationwide distribution of fuelwood, per the new draft Forestry Code and given economic demand	USAID/Georgia does not now directly address these actions necessary. However, under DO 1, which focuses on accountable government, and IR 1.4, which supports transparency in government, they may be indirectly addressing these actions necessary if supporting staff or officials at MEPA, APA, or other biodiversity focused government agencies.
Increase economic capacity-building • Support sustainable livelihoods / income-generating activities for local citizens near protected areas to provide services, food, and goods to visitors • Provide training and opportunities to sustainably harvest, process, and market products derived from nature	USAID/Georgia does not now directly address these actions necessary. However, under DO 2, IR 2.2 and 2.4, which support inclusive sustainable growth, improved employment, and an enhanced workforce, they may be indirectly addressing these actions necessary if supporting local economic growth projects around protected areas (e.g., Zrda, YES-Georgia, and Economic Security programs). There is also the possibility of exacerbating some threats and drivers in this DO, potentially through support of agriculture, energy, and tourism projects.

TABLE 7. "EXTENT TO WHICH" USAID CONTRIBUTES TO ACTIONS NECESSARY	
ACTIONS NECESSARY TO ACHIEVE BIODIVERSITY CONSERVATION	EXTENT TO WHICH THE CURRENT CDCS AND ACTIVITIES CONTRIBUTE TOWARD ACTIONS NECESSARY
Expand civil society development • Support research into positive biodiversity impacts and consequences of biodiversity loss on women, ethnic or religious minorities • Support research into the relationships among local poverty, misuse of biodiversity resources and conflict	USAID/Georgia does not now directly address these actions necessary. However, under DO 1 and IR 1.1, which support accountable governance and a more informed citizenry, and DO 3, IR 3.2, which support an integrated society that is increasingly inclusive, they may be indirectly addressing these actions necessary if engaging rural citizens, citizens living near protected areas, women, ethnic and religious minorities, and the poor. Under DO 3, IR 3.3, which focuses on improved health, they may be indirectly addressing these actions necessary if supporting health programs that promote water sanitation.
DRIVER: LACK OF INSTITUTIONAL CAPACITY, PRIORITIZATION, AND HUMAN RESOURCES FOR BIODIVERSITY	
Improve government effectiveness • Increase investment in MEPA and NFA in terms of staff numbers and technical expertise, especially in developing planning strategies • Improve awareness in law enforcement agencies about existing national and international biodiversity laws • Strengthen judiciary practices related to wildlife and environmental crimes • Make penalties for wildlife and environmental crimes commensurate with negative impacts • Support decentralization efforts that educate and empower local authorities to manage conservation efforts and budgets • Improve government fundraising and budget management skills so as to decrease dependence on	USAID/Georgia does not now directly address these actions necessary. However, under DO 1, IR 1.4, which supports responsive and effective governance, they may be indirectly addressing these actions necessary if supporting staff or officials at the MEPA, APA, or other biodiversity focused government agencies. Under DO 1, IR 1.2, which supports more transparent political processes, they may be indirectly addressing these actions necessary if supporting decentralization initiatives and under IR 1.3, which supports professional application to the rule of law, if supporting improvements to the judiciary system.

TABLE 7. "EXTENT TO WHICH" USAID CONTRIBUTES TO ACTIONS NECESSARY	
ACTIONS NECESSARY TO ACHIEVE BIODIVERSITY CONSERVATION	EXTENT TO WHICH THE CURRENT CDCS AND ACTIVITIES CONTRIBUTE TOWARD ACTIONS NECESSARY
international organizations or donors • Increase prioritization of biodiversity conservation in government and donor environmental funding	
DRIVER: LACK OF ENVIRONMENTAL AWARENESS	
Expand civil society development • Raise citizen awareness and knowledge of their rights, penalties for infractions, and the roles and responsibilities of law enforcement around biodiversity and natural resource management • Expand efforts to understand citizen perspectives and/or concerns regarding environmental management and biodiversity conservation • Improve the capacity of local NGOs to do public awareness campaigns and share lessons learned	USAID/Georgia does not now directly address these actions necessary. However, under DO 1, IR 1.1, which promotes a more engaged citizenry, and DO 3, IR 3.2, which supports inclusion of target populations, they may be indirectly addressing these actions necessary if engaging civil society organizations and youth groups.
Increase economic capacity-building • Increase opportunities and funding for scientists to work on and students to study biodiversity conservation activities • Support ecosystem valuation studies and distribute the results to officials and the public	USAID/Georgia does not now directly address these actions necessary.

TABLE 7. "EXTENT TO WHICH" USAID CONTRIBUTES TO ACTIONS NECESSARY	
ACTIONS NECESSARY TO ACHIEVE BIODIVERSITY CONSERVATION	EXTENT TO WHICH THE CURRENT CDCS AND ACTIVITIES CONTRIBUTE TOWARD ACTIONS NECESSARY
Improve education around biodiversity conservation: • Improve quality of primary, secondary, and university-level education on the importance of environmental management, the interrelation between environmental management and conservation and improved livelihoods, and sustainable resource management and use. • Enhance links between government, NGOs and educational/research institutions towards concerted work in public awareness of biodiversity	USAID/Georgia does not now directly address these actions necessary.
DRIVER: UNSUSTAINABLE, NON-SYSTEMATIC DEVELOPMENT	
Improve government effectiveness • Support system-scale planning for nationwide energy development that compares a range of pathways, including different mixes of generation technologies and strategic siting to minimize impacts • Ensure development projects are undertaken with appropriate environmental and climate data analysis prior to the start of work • Ensure that biodiversity concerns are incorporated into development and spatial planning at the local, regional and national levels, and that these plans are implemented	USAID/Georgia does not now directly address these actions necessary. However, under DO 2, IR 2.3, which promotes more responsible management and development of Georgia's natural endowments, they may be indirectly addressing these actions necessary if undertaking projects that promote responsible development.

TABLE 7. "EXTENT TO WHICH" USAID CONTRIBUTES TO ACTIONS NECESSARY	
ACTIONS NECESSARY TO ACHIEVE BIODIVERSITY CONSERVATION	EXTENT TO WHICH THE CURRENT CDCS AND ACTIVITIES CONTRIBUTE TOWARD ACTIONS NECESSARY
• Ensure national ministries responsible for development projects solicit and receive early and systematized input from the MEPA, in line with the letter and spirit of Georgian law	
Increase economic capacity-building • Ensure development projects are undertaken with appropriate environmental and climate data analysis prior to the start of work • Target infrastructure, extractive, and agricultural sectors for sensitization and collaboration in protecting biodiversity and forests around their operations • Improve agricultural practices to limit overgrazing and increase productivity	USAID/Georgia does not now directly address these actions necessary. However, under DO 2, IR 2.3, which supports more responsible management and development, they may be indirectly addressing these actions necessary if promoting responsible management in Georgia's agriculture and energy sectors. Under DO 2, IR 2.2, which supports employment generation and 2.4, which supports enhancing the quality of Georgia's workforce, they may be indirectly addressing these actions necessary by supporting local economic growth projects around tourism (e.g., Zrda, YES-Georgia, and Economic Security programs). There is also the possibility of exacerbating some threats and drivers in this DO, potentially through support of agriculture, energy, and tourism projects.
DRIVER: LACK OF ENVIRONMENTAL DATA AND MONITORING	
Improve government effectiveness • Apply international standards for storing and managing biodiversity data • Integrate biodiversity data from NGOs, civil society organizations, and/or academic institutions and consider their recommendations with respect to existing GOG biodiversity monitoring system efforts • Increase funding and human resource capacity to undertake more systematic monitoring of	USAID/Georgia does not now directly address these actions necessary. However, under DO 2, IR 2.3, which promotes more responsible management and development of Georgia's natural endowments, they may be indirectly addressing these actions necessary if projects indirectly support responsible biodiversity data collection and monitoring.

TABLE 7. "EXTENT TO WHICH" USAID CONTRIBUTES TO ACTIONS NECESSARY	
ACTIONS NECESSARY TO ACHIEVE BIODIVERSITY CONSERVATION	EXTENT TO WHICH THE CURRENT CDCS AND ACTIVITIES CONTRIBUTE TOWARD ACTIONS NECESSARY
natural or biodiversity resources outside of protected areas • Provide more funding, equipment, and updated technology for monitoring biodiversity conservation activities	
Increase economic capacity-building • Support projects that inventory species and ecosystems, especially around infrastructure development projects • Support solutions that protect species and ecosystems threatened by climate change (e.g., targeting protection of high-elevation areas where vegetation and species may shift as temperatures warm).	USAID/Georgia does not now directly address these actions necessary. However, under DO 2, IR 2.3, which promotes more responsible management and development of Georgia's natural endowments, they may be indirectly addressing these actions necessary if projects indirectly support responsible biodiversity data collection and monitoring. There is also the possibility of exacerbating some threats and drivers in this DO, potentially through support of agriculture, energy, and tourism projects.
DRIVER: LACK OR MISMANAGEMENT OF GOVERNMENT FUNDS	
Improve government effectiveness • Support development planning efforts to integrate local input into project development planning and hand-over to local authorities or communities following implementation • Pay civil servant salaries (e.g., park rangers, environmental managers, government researchers) that allow them to focus on their occupation and not need to engage in other business and illegal practices	USAID/Georgia does not now directly address these actions necessary. However, under DO 1, IR 1.4, which supports more transparent and effective governance and service delivery, they may be indirectly addressing these actions necessary if supporting decentralization initiatives and if supporting staff or officials at the MEPA, APA, or other biodiversity focused government agencies.

TABLE 7. "EXTENT TO WHICH" USAID CONTRIBUTES TO ACTIONS NECESSARY	
ACTIONS NECESSARY TO ACHIEVE BIODIVERSITY CONSERVATION	EXTENT TO WHICH THE CURRENT CDCS AND ACTIVITIES CONTRIBUTE TOWARD ACTIONS NECESSARY
• Improve capacity of government officials/ staff in effective financial management	
DRIVER: LEGISLATIVE GAPS	
Improve government effectiveness • Support the final passage of draft laws related to environment and conservation and any additional mechanisms required for enforcement • Tie national and local legislative progress to international agreement requirements to motivate compliance	USAID/Georgia does not now directly address these actions necessary. However, under DO 1, IR 1.2, which supports more transparent political processes, and1.4, which promotes more responsive governance, they may be indirectly addressing these actions necessary if supporting Parliamentarians or their staff on environmental or conservation legislation or initiatives.
Expand civil society development • Support the publication of draft conservation laws and public forums to solicit commentary and feedback	USAID/Georgia does not now directly address these actions necessary.
DRIVER: POOR COORDINATION AMONG GOVERNMENT, BILATERAL, MULTILATERAL, PRIVATE, AND NGO ACTORS	
Improve government effectiveness • Improve communications among development actors on issues of biodiversity and conservation	USAID/Georgia does not now directly address these actions necessary.
Expand civil society development • Encourage more exchange of information and best practices within and across sectors	USAID/Georgia does not now directly address these actions necessary. However, under DO 1, IR 1.1 and IR 1.2, which promotes a more engaged citizenry and more deliberative political processes, they may be indirectly addressing these actions necessary if supporting public forums, the establishment of advocacy groups, or other initiatives that

TABLE 7. "EXTENT TO WHICH" USAID CONTRIBUTES TO ACTIONS NECESSARY	
ACTIONS NECESSARY TO ACHIEVE BIODIVERSITY CONSERVATION	EXTENT TO WHICH THE CURRENT CDCS AND ACTIVITIES CONTRIBUTE TOWARD ACTIONS NECESSARY
	give citizens opportunity to engage their government of issues of biodiversity or conservation.
Increase economic capacity-building • Ensure biodiversity and conservation concerns are addressed in development projects	USAID/Georgia does not now directly address these actions necessary.

SECTION 9 – RECOMMENDATIONS

9.1 RECOMMENDATIONS BASED ON ACTIONS NECESSARY TO CONSERVE BIODIVERSITY

USAID/Georgia does not administer dedicated funding for natural resource management under its current CDCS, and this is not expected to change under the new CDCS. However, there are varied opportunities to improve forests and biodiversity as part of the existing Democracy and Governance, Economic Growth, and Social Development technical area programs. Georgia's unique and important natural resources support local communities; provide a foundation for energy development, including renewable energy development; sustain healthy agricultural systems; and are a key attraction for international and local tourism. USAID/Georgia, through its existing and future programming, has the potential to influence each of these areas and contribute to the preservation and sustainable management of these resources. The Analysis Team recommends that USAID/Georgia considers biodiversity with respect to each of their programs and supports the ongoing concept of mainstreaming biodiversity within its own projects. Broadly, programming that funds eco-tourism, agricultural development, energy development, and social development has the potential to positively or negatively impact biodiversity. If done well, these efforts can significantly improve and protect Georgian natural resources.

9.2 RECOMMENDATIONS BASED ON THE CURRENT CDCS

Specific recommendations provided below link to the priority drivers and threats identified in Section 6, build on the necessary actions developed in Section 7, and emerge from the analysis of the extent to which USAID/Georgia already addresses them in Section 8. Recommendations reflect the results of the cross-sectoral workshop that included representatives from all mission technical teams and occurred at the completion of the field effort. They are generally in line with Mission perceptions of practicable and actionable and are prospectively aligned with anticipated strategic priorities. They are not prescriptive, however, and will require further tailoring based on USAID programming under the new CDCS.

The categories below allow USAID/Georgia to appropriately focus certain actions on existing programming and additional actions on future programming. Recommendations are then listed and separated into actions specific to each technical office and into the following three categories:

- **Attainable (Short Term):** Working within existing programming and with a relatively low level of effort to integrate into the existing context in Georgia.
- **Strategic (Long Term):** Adapting programs to improve the extent to which USAID is meeting the actions necessary to reduce threats over the long term.
- **For Future Consideration:** Actions that are the most difficult to implement and require additional detailed review and evaluation and are provided for consideration by USAID.

TABLE 8. RECOMMENDATIONS BASED ON THE CURRENT CDCS			
DEVELOPMENT OBJECTIVES AND INTERMEDIATE RESULTS	ATTAINABLE (SHORT-TERM)	STRATEGIC (LONG-TERM)	FOR FUTURE CONSIDERATION
DO 1: DEMOCRATIC CHECKS AND BALANCES AND ACCOUNTABLE GOVERNANCE ENHANCED			
Capacity-building (IR 1.1: A more informed and engaged citizenry and IR 1.2: Political and electoral processes are more competitive, deliberative, and transparent)	Invest in capacity-building activities for government officials at every level to develop new and innovative ideas to address social and economic challenges, especially in rural areas or for vulnerable populations (e.g., job training, community engagement activities support). Integrate environmental impacts knowledge into capacity-building activities for all stakeholders. Provide technical assistance to local governments to better-address environmental concerns, including on environmental compliance and on local policy development or community communications strategies. Incorporate questions about the environment and natural resource management into citizen opinion surveys, focus groups, and other data collection tools and	Work directly with Parliamentary committees and government ministries and agencies focused on biodiversity or conservation to strengthen policy, legislative, and management capabilities. As part of decentralization efforts, support local self-government in the development of environmental protection, development, and spatial plans.	Provide technical assistance on needed conservation legislation (e.g., a new hunting code), including drafting, building coalitions of support, and finalization/ passage. Support projects that bring together stakeholders to work jointly on nature conservation activities.

TABLE 8. RECOMMENDATIONS BASED ON THE CURRENT CDCS			
DEVELOPMENT OBJECTIVES AND INTERMEDIATE RESULTS	ATTAINABLE (SHORT-TERM)	STRATEGIC (LONG-TERM)	FOR FUTURE CONSIDERATION
	support government management and public dissemination of that information, including an emphasis on the link between natural resources and ecosystem services.		
Rule of Law (IR 1.3: Independent, consistent, and professional application of the rule of law)	Support the development and passage of framework legislation that strengthens biodiversity conservation, including existing draft legislation on for water management, soil, seed, wind breaks, and emissions, among others. Strengthen judicial practices related to environmental crime, including by the stepwise implementation of new policies and laws to monitor how actions impact citizen behavior. (This could include pilot programs to manage resources and address corruption.).	Focus on decreasing environmental crimes, through the strengthening of judicial enforcement, including the continued strengthening of penalties and increasing transparency.	Promote activities that increase the capacity of and provide training for law enforcement around biodiversity regulations and the changing legal framework.
Cooperation (IR 1.4: Transparent, responsive, and effective governance and service delivery)	Support international donor and government biodiversity initiatives, especially those that strengthen the developing legal	Consider a single biodiversity conservation communications forum coordinated by donors and government to focus efforts and avoid overlap	Consider a single biodiversity conservation funding mechanism coordinated by donors and government to focus efforts and avoid overlap

TABLE 8. RECOMMENDATIONS BASED ON THE CURRENT CDCS			
DEVELOPMENT OBJECTIVES AND INTERMEDIATE RESULTS	ATTAINABLE (SHORT-TERM)	STRATEGIC (LONG-TERM)	FOR FUTURE CONSIDERATION
	framework.	in activities.	in activities.
Monitoring and Mitigation of Development Projects (Cross-cutting)	Support development project environmental monitoring activities, including tracking of mitigation measures throughout project periods of performance. Support efforts to implement and strengthen the EIA process.	Train GOG EIA reviewers on best practices in EIA review per Georgian law, USAID standards, and international best practice.	Provide assistance for regular updating of a Georgia-specific EIA guide to help implementers comply with the new EIA law.
Protected Areas Support (Cross-cutting)	Support APA efforts to collect, share, and manage biodiversity data throughout the protected area system and with the public, including carrying capacity studies. Consider supporting programming that increases funding to APAs, including through entrance and use fee structures, taxes, and eco-vacations where tourists work to clean or otherwise improve the protected areas.	Encourage the protection of additional lands, particularly recognized biomes and species' habitats, under the protected area system and/or the Emerald Network, and facilitate technical assistance, as feasible, to promote protected area expansion (supports Yale Environmental Performance Index (EPI) Biodiversity and Habitat Indicators). Provide more funding, equipment, and updated technology for monitoring biodiversity conservation activities throughout Georgia (e.g., advanced technological devises for species tracking or a national standardized	Strengthen biodiversity and related action plans with concrete, reasonable budget proposals and measurable results for all areas covered by the APA.

TABLE 8. RECOMMENDATIONS BASED ON THE CURRENT CDCS			
DEVELOPMENT OBJECTIVES AND INTERMEDIATE RESULTS	ATTAINABLE (SHORT-TERM)	STRATEGIC (LONG-TERM)	FOR FUTURE CONSIDERATION
		system of species data).	
DO 2: INCLUSIVE AND SUSTAINABLE ECONOMIC GROWTH			
Development projects (IR 2.1: Improved economic governance and leadership)	Support appropriate EIA and other environmental review of all development projects and ensure that biodiversity is adequately considered during project development. Support the development of management action plans for all types of small and medium enterprise projects, which can chart courses for design, process, and sale of goods and services.	Strengthen environmental review of development projects by requiring integration of international best practices (e.g., USAID or International Finance Corporation standards) into development planning and provide tools for appropriate monitoring and mitigation.	Promote projects and initiatives that safeguard sensitive ecological areas, especially those vulnerable to infrastructure development (e.g., the Rioni river). Advocate for developers to invest in conservation initiatives or projects that offset negative development project impacts (including waste management projects).
Job creation (IR 2.2: Increased competitiveness and employment generation in targeted sectors and IR 2.4: Quality and market-oriented workforce enhanced.)	Ensure that environmental considerations are not secondary to economic growth objectives in any USAID/Georgia projects. Propagate job opportunities – including 21st century jobs, for example in IT – in both rural and urban areas to reduce reliance on illegal or extractive activities.	Provide training to sustainably harvest, process, and market products derived from nature (e.g., honey, fruit sauces). Support internships and other educational opportunities for high school and university students interested in ecology to gain appreciation for and practical experience in biodiversity.	Consider job training programs focused on improving conservation expertise, particularly in rural areas or in communities around the protected areas.
Energy	Encourage efforts that improve gasification or	Advance energy development projects	Promote mainstreaming of biodiversity objectives

TABLE 8. RECOMMENDATIONS BASED ON THE CURRENT CDCS			
DEVELOPMENT OBJECTIVES AND INTERMEDIATE RESULTS	ATTAINABLE (SHORT-TERM)	STRATEGIC (LONG-TERM)	FOR FUTURE CONSIDERATION
(IR 2.3: More responsible management and development of Georgia's natural endowments)	renewable energy production, costs, and use in rural areas. Support system-scale planning for nationwide energy development that compares a range of pathways, including different mixes of generation technologies and strategic siting to minimize impacts.	that both are environmentally sound and will support rural communities, especially renewable energy projects, providing that facility siting is consistent with a national programmatic strategy.	into energy development planning and strategies (e.g., considering hydropower plant impacts on aquatic connectivity).
Tourism (IR 2.3: More responsible management and development of Georgia's natural endowments)	Support environmental eco-tourism and sustainably grow Georgia's tourism industry (e.g., through strategic planning for tourism development, especially high-quality experiences, in protected areas and other eco-tourism hotspots).	Support economic activities that promote biodiversity conservation and preserve natural resources in or near tourism hotspots including sustainable nature-related products, clean production methodologies, green infrastructure, and improvements to waste management programs.	Promote mainstreaming of biodiversity objectives into tourism planning and strategies (e.g., consider tourism activities that may support or promote education on endangered species for all visitors, including bird watching tours or establishment of rehabilitation preserves). Support policies and legislation that promote low impact energy use and green technologies as part of economic growth efforts.
Agriculture (IR 2.3: More responsible management and development of Georgia's natural endowments)	Provide support to rural communities to put greater value on ecological concerns and sustainable value chains, including through an emphasis on organic certification and relevant	Emphasize organic production (or limited and targeted fertilizer and pesticide use) in rural areas including programs to maintain soil health, improve crop sustainability, reduce the	Promote mainstreaming of biodiversity objectives into agricultural planning and strategies (e.g., provide support for initiatives that promote good conservation practices but limit the

TABLE 8. RECOMMENDATIONS BASED ON THE CURRENT CDCS			
DEVELOPMENT OBJECTIVES AND INTERMEDIATE RESULTS	ATTAINABLE (SHORT-TERM)	STRATEGIC (LONG-TERM)	FOR FUTURE CONSIDERATION
	sectors in the tourism industry; education campaigns; and funding mechanisms.	use of chemicals, and other sustainable practices, in line with Yale EPI.	need for international donor funding).
DO 3: INCREASINGLY STABLE, INTEGRATED, AND HEALTHY SOCIETY			
Education (IR 3.1: Increased engagement with the occupied territories and IR 3.2: Increased inclusion of target populations)	Integrate conservation education into youth, women, and minority programming and programs that work across the conflict line.	Develop outreach programs that raise conservation awareness among school children, young adults and the public throughout Georgia, including those that use new technologies like social media.	Develop research activities, including surveys, focus groups, or studies, on the impacts of poor conservation on women, minority groups and youth throughout Georgia.
Pollution (IR 3.3: Improved and sustainable health outcomes and decreased incidence of communicable disease)	Continue or grow initiatives that indirectly but positively impact biodiversity (WASH, waste management projects) and demonstrate the link between environmental conservation and a healthy population.	Expand waste management or WASH programming to focus on activities that promote water quality and address water pollution. Support policymakers' efforts to utilize the UNFCCC, EU regulations, and other international agreements as guideposts for national policies and legislation.	Develop programming focused on maintaining and improving targeted threatened waterways, which contain unique biodiversity and impact human health (e.g., from heavy metals from mining and other pollutants)

ANNEXES

Annex A: Scope of Work

Annex B: Team Member Bios

Annex C: List of Reference Documents Consulted

Annex D: Interview Template

Annex E: Table of Key Government-Administered Protected Areas

Annex F: Table of National Laws and Strategies Related to Biodiversity

Annex G: Key Conservation Initiatives

Annex H: Maps

A. SCOPE OF WORK

The Assessment team will undertake the following activities:

PURPOSE AND OBJECTIVE

The purpose of this task is to conduct a biodiversity assessment in Georgia for the purposes of complying with Section 119 of the U.S. Foreign Assistance Act (FAA) of 1961, as amended, and country strategy guidelines under ADS 201.3.4.11 and ADS 204.5.

This FAA Section 119 assessment (hereafter, "Assessment") will assist the Mission to define how its new five-year country development cooperation strategy (CDCS) contributes to Georgia's conservation needs, as required by U.S. legislation and agency regulations. This assessment will also serve as a planning tool to assist USAID/Georgia in better integrating concerns pertaining to conservation of biodiversity into their overall programming.

BACKGROUND

USAID/Georgia is currently in the process of developing a new CDCS for the 2020-2025 timeframe. Biodiversity conservation is a critical component of achieving sustainable development and should be considered in Mission strategic approaches as a way to improve development outcomes.

FAA Section 119 requires USAID analyze national needs for conserving biological diversity and potential USAID contributions to these needs in all country strategy plans. Specifically, FAA Section 119(d), Country Analysis Requirements require that: "Each country development strategy, statement, or other country plan prepared by the Agency for International Development shall include an analysis of:

1) The actions necessary in that country to conserve biological diversity, and

2) The extent to which the actions proposed for support by the Agency meet the needs thus identified."

This Assessment thus must adequately respond to the two questions for country strategies, also known as "actions necessary" and "extent to which." The Assessment further serves as an opportunity for the Mission to better understand the strategic linkages between the conservation of the country's biodiversity and development, so that it can structure a sound CDCS Results Framework that will support future programming.

Potential USAID partners and other stakeholders, including the Government of Georgia (GOG), Georgian civil society organizations (CSOs), and other domestic and international development partners will have an opportunity to convey their views on Georgia's biodiversity conservation needs, to reassess their past and current cooperation (or the lack of cooperation) with USAID in this area, and to learn about opportunities for conserving biodiversity that the Mission may address in 2020- 2025.

As Georgia is not a tropical country, a tropical forest analysis mandated by FAA 118 is not required.

DESK REVIEW, DATA COLLECTION, WORK PLANNING, AND PRE-FIELD REPORTING (~5 WEEKS)

1. Develop questionnaires, surveys, focus group discussion (FGD) guides, and other data collection tools that will be used in Georgia. Develop the list of stakeholders who will be invited to share their opinion on biodiversity status, key biodiversity issues, policy and institutional frameworks, and related topics. Develop the schedule of tasks/milestones and related consultations, surveys, meetings, round table discussions, FGDs, site visits, and other events/venues planned for data collection in Georgia.
2. In coordination with the Mission, begin planning site visits based on the Mission's recommendations and on the Team's preliminary review of key topics and information gaps. The team will discuss organizations to be contacted and any planned site visits with the Mission and coordinate as required.
3. Develop the Assessment Work Plan (AWP) that includes the list of Assessment stakeholders and stakeholder engagement strategy, the schedule of tasks/milestones and data collection events/venues, and data collection tools, described above as described in #5 above.
4. Gather and begin to analyze existing information on biodiversity in Georgia to identify biodiversity status, key biodiversity issues (including climate change related impacts), relevant stakeholders, policy and institutional frameworks, practices and promotion systems, as well as gaps in the available information.
5. Conduct a desk review of existing documentation on biodiversity in Georgia, such as those prepared by the host government agencies, donors, and national and international non- governmental organizations (NGOs). Examples of such documents may include the National Biodiversity Strategy and Action Plan of Georgia (NBSAPG), Georgia's Fifth National Report to the Convention on Biological Diversity (FNRCBD), National Environmental Action Plan (NEAP); Global Environment Fund (GEF) project reports; reports by FAO, UNESCO, UNEP, or UNDP; reports by conservation NGOs, etc. If readily available, the Mission will provide GIS data. USAID FAA 119 Analyses for Georgia can be found at: https://sites.google.com/a/usaid.gov/eebeu/countries/georgia
6. The Mission will provide the team with its current 2013-2020 CDCS, relevant project/activity documents, and a draft Results Framework for the new CDCS (if available). The Mission also may provide the team with advice and protocol on approaching USAID partners and host country organizations with respect to this assignment. The team shall be aware of sensitivities related to an assessment exercise (e.g., the potential for raising expectations, and the need to be clear as to the purpose of the assessment) and respect Mission guidance.
7. Hold meetings with the Europe & Eurasia (E&E) Bureau Environmental Officer (BEO) and deputy BEO (dBEO), other E&E Bureau technical staff as recommended by USAID/Georgia, relevant staff of the Forestry and Biodiversity Office (FAB) of the Bureau for Economic Growth, Education and Environment (E3), the U.S. Forest Service of the U.S. Department of Agriculture (USFS), the National Parks Service of the U.S. Department of Interior (DOI), and any other Washington, DC-based entities (such as other U.S. government agencies and conservation organizations with active programs in Georgia) to gather relevant information on regional programs and agency environmental regulations.
8. Develop the Pre-Fieldwork Draft Report (Draft 1) of the FAA 119 that summarizes the literature/information available on biodiversity but does NOT include findings/conclusions/recommendations, which are supposed to be specifically informed by the in-country consultations and visits.

FIELD WORK, DATA COLLECTION AND ANALYSIS (~2 WEEKS)

1. Upon arrival in Georgia, meet with the Mission Program and Environmental Officers to get Mission perspectives on the assignment, discuss the Mission's current CDCS (2013-2020) and activities, and gain an understanding of the status of the CDCS program goals and objectives, specific Mission interests and protocol on approaching USAID partners and host country organizations with respect to the assignment.
2. Meet with the Office of Economic Growth and the Office of Democracy, Governance and Social Development to gain an understanding of their current activities and proposed draft CDCS goals and objectives (if available) and to get their recommendations for consultations, interviews, surveys, round table discussions, FGDs, site visits, and other data collection events and tools.
3. Discuss biodiversity status and key issues, policy and institutional frameworks, and related topics with relevant GOG organizations, market regulators, local research centers, local and international NGOs, donors and other organizations, initiatives/projects, and individuals, who are involved in forest and biodiversity conservation and/or relevant cross-cutting issues or may influence policies and/or activities that have impact on biodiversity in Georgia. The Mission will facilitate introductions to USAID partners and host country organizations and provide the points of contact. The Mission may delegate one or more staff members to work full-time with the Team or to participate in the field data collection. All costs associated with the participation of full-time/part-time Mission delegates in the FAA 119 Analysis will be covered by the Mission.
4. Conduct one to three site visits, to supplement the understanding gained from interviews, literature, and other second-hand sources. The Mission expects the Contractor to consider key protected areas in Lagodekhi in western Georgia, and/or Kolkheti and Mtirala National Parks in western Georgia as potential site visit locations.
5. Prior to departure, prepare an MS PowerPoint based presentation of FAA 119 Analysis methodology, tasks, key findings, as well as preliminary conclusions and recommendations and present at pre-departure briefings for the Mission.

POST-FIELD WORK REPORTING

1. Following completion of fieldwork, the Assessment team will build upon the pre-field Draft 1 of the Assessment to develop Draft 2 of the Assessment. Draft 2 will include discussion on the "actions necessary" and the "extent to which" the current programming and that proposed in the new USAID/Georgia CDCS and relevant project/activity design documents meet Georgia's biodiversity conservation needs identified, and recommendations for how USAID/Georgia's new CDCS, and existing and future programming, can best support the needs identified. This Draft 2 will be submitted as a full review draft FAA 119 Assessment for mission review and comment.
2. Upon receipt of consolidated USAID comments from a single Draft 2 review cycle, ECOS will prepare a Final Report (Draft 3) for submission to USAID.

METHODOLOGY

It is anticipated that a mix of analytical approaches will be required to meet the requirements outlined in the Scope of Work section above. Suggested data sources include: (a) USG publications, (b) GOG publications, (c) publications of other biodiversity stakeholders, (d) individual and group consultations, (e) interviews, (f) surveys, (g) round table discussions, (h) FGDs, (i) site visits, and (j) direct observations.

When planning and conducting the Assessment, the team will make every effort to reflect opinions and suggestions of all major stakeholders and different gender perspectives. Where surveys or interviews are used, appropriate sampling and questioning techniques will be utilized to ensure representative

results. Emphasis will be on collection of reliable empirical data and/or objectively verifiable evidence, as opposed to anecdotal evidence.

The Contractor will apply the staged approach as outlined in Section III, above, to ensure that international specialist(s) have acquired sufficient knowledge of Georgia's biodiversity status and needs, stakeholders, policy and institutional frameworks, practices and promotion systems before arrival to Georgia.

FAA 119 ANALYSIS TEAM QUALIFICATIONS AND COMPOSITION

A. THE TEAM LEADER WILL LEAD THE ANALYSIS AND SHOULD BE A SENIOR-LEVEL NATURAL RESOURCE MANAGEMENT SPECIALIST WITH THE FOLLOWING QUALIFICATIONS:

- Post-graduate qualifications (master's level degree or higher) in biology, ecology, zoology, forestry, ecosystem conservation, political economy, or a closely related field;
- Knowledge of USAID's strategic planning process related to biodiversity;
- Expertise in assessing environmental threats;
- Experience in the geographical region and the specific country;
- Experience coordinating analyses and leading teams;
- Exceptional organizational, analytical, writing and presentation skills; and
- Fluent in English.

B. NATURAL RESOURCES AND ENVIRONMENTAL MANAGEMENT SPECIALIST OR ENVIRONMENTAL POLICY SPECIALIST SHOULD HAVE THE FOLLOWING QUALIFICATIONS:

- Expertise in the country's environmental policy and institutional framework;
- Expertise in the country's biodiversity (including forests) and natural resources management status;
- Good contacts within the country's government agencies, non-governmental organizations, international donors and private sector; and
- Fluent in English.

C. OTHER POSSIBLE TEAM MEMBERS:

- Agricultural, governance, health or other non-environment sector specialist who will focus on linkages between biodiversity and other key technical sectors.

FAA 119 ASSESSMENT MANAGEMENT

The Mission will appoint an FAA 119 Analysis Activity Manager (AM) and an Alternate Activity Manager (A/AM) to provide technical guidance and administrative oversight in connection with the Assessment, to review the AWP, and to review and accept Drafts 1, 2, and 3 of the Assessment report.

To facilitate Assessment planning, the AM or A/AM will make available to the Contractor the list of current USAID/Georgia projects and activities, implementing partners, counterparts, and project/activity sites within one working day of the award effective date (as warranted, the Contractor will receive additional documentation).

The Contractor will submit an electronic version of the revised FAA 119 AWP to the AM and A/AM prior to arrival to Georgia. The contractor will also submit an electronic version of the Pre-Field Draft Report (Draft 1) to the AM and A/AM prior to arrival to Georgia.

The Assessment team will provide periodic briefings to the AM, A/AM, and other relevant Mission personnel in order to keep them informed of the progress of the Assessment and any issues that may arise/have arisen. The Team shall also be prepared to do a briefing for the AM and A/AM and other

relevant Mission personnel within two working days after their arrival for in-country consultations and site visits. The Team will discuss any FAA 119 Analysis barriers/constraints and significant deviations from the original/updated FAA 119 Analysis AWP with the Activity Manager and seek USAID/Georgia's guidance on those matters.

TIMING AND LOGISTICS

Contract start date: 03.18.2019

Completion date: 12.31.2019

It is anticipated that the Assessment will require up to sixteen (16) working weeks including two to 3 (2-3) weeks of work in Georgia.

Upon executing the contract:

- **Document review and meetings in the US** will begin on/about 03.25.2019 and continue through on/about 04.30.2019 (5 working weeks)
- The contractor will submit the **AWP** to USAID/Georgia on/about 04.12.2019; and
- The contractor will submit the **Pre-Fieldwork Report** (Draft 1 of the Assessment) to USAID/Georgia on/about 05.03.2019.
- The full Assessment team will begin **Fieldwork** in Georgia on/about 05.19.2019.
- **Mission In-Briefing** will be conducted on 05.20.2019 or 05.21.2019.
- **Mission Exit Briefing** will be conducted on 05.30.2019 or 05.31.2019.
- The **Post-Fieldwork Report** (Draft 2 of the Assessment [English version]) will be due within 4 working weeks of the Exit Briefing, on/about 06.30.2019 (*draft Results Framework for 2020-2025 may be provided later – per the preliminary schedule of the Mission's CDCS development process, the draft Result Framework will be ready on/about end of June 2019).*
- **Consolidated USAID comments** (i.e., from the Mission, the E&E biodiversity advisor, the E&E BEO, and [if determined appropriate by the Mission], the E3 FAB Office) based upon review of the Post-Field Work Review Draft (Draft 2) will be returned to ECOS within 3 (three) working weeks (i.e., by 07.21.2019)
- The **Final Report** (Draft 3 of the Assessment [English version]) will be due in 2 (two) working weeks following the receipt of the Mission's comments on Draft 2, by on/about 08.04.2019. Both the Mission and the Contractor will have a right to initiate an extension of the Assessment review or preparation/completion time for up to 10 working days at no additional cost. The Final Report will be translated (without annexes) due in 2 (two) working weeks following approval from the mission on English version (by ~08.18.2019, unless report finalization gets extended as outlined above).

The Contractor will be responsible for all logistical support for Assessment activities, including translation/interpretation, transportation, accommodation, meeting/visit arrangements, office space, equipment, supplies, insurance and other contingency planning (the Assessment is a time-sensitive task). The Team will coordinate logistical arrangements with the Activity Manager, USAID/Georgia Mission Environmental Officer (MEO) and USAID/E&E BEO. The Mission will support introductions to relevant entities for ECOS to interview. Team Leads from the Missions will be available for meetings with ECOS.

USAID requests that any forthcoming American and Georgian holidays be considered in scheduling assessment meetings, group discussions, surveys, and site visits in the United States and Georgia.

DELIVERABLES

The contractor will be required to provide USAID with the following deliverables:

A. ASSESSMENT WORK PLAN (AWP)

The AWP will define key Assessment tasks and milestones and include:

(1) the Assessment Stakeholder Engagement Strategy;
(2) a list of conducted or planned Washington, D.C.-based consultations;
(3) an illustrative agenda for Development Objective (DO) and USAID/Georgia Program Office meetings and for the in-briefing and exit briefings;
(4) a proposed list of non-USAID in-country stakeholders for consultations, interviews/meetings, and other related data collection activities
(5) a preliminary schedule of in-country consultations, interviews/meetings, survey(s)*, round table(s)*, and FGDs*, and any other data collection events/venues,
(6) proposed locations for site visits, consistent with mission's criteria for site visit selection, including illustrative field work itinerary/ies;
(7) all data collection tools (e.g., questionnaire(s), survey(s), FGD guides), to be used during the Assessment;
(8) an outline of the Draft 1 and Draft 2/Draft 3 Reports, drawing from the outline provided in Annex A of the SoW.
**if determined necessary*

B. DRAFT 1 OF FAA 119 (PRE-FIELD REPORT)**

Draft 1 of the report will summarize the literature and information available on biodiversity. This draft will not include findings, conclusions, or recommendations. This first draft will mainly focus on the I. Introduction, II. Country Context, III. Status of the Country's Biodiversity (as provided in the literature), IV. Value and Economic Potential, and V. Legal Framework Affection Conservation. (The sections are per the outline in the attached Annex A) Draft 1 may also contain initial sketch of Direct Threats (VI.1) and Drivers (VI.2), though these sections will not be mandatory.

C. EXIT BRIEFING PRESENTATION

At conclusion of in-country portion of the Assessment, the team will prepare an MS PowerPoint based presentation providing brief overview of Assessment methodology, tasks, as well as preliminary discussion of key findings, conclusions, and recommendations. This will be presented at an Exit Briefing at the Mission.

D. DRAFT 2 OF FAA 119 (POST-FIELDWORK REVIEW DRAFT)**

This second draft will build upon Draft 1 and a include discussion on the "actions necessary" and the "extent to which" the current programming and that proposed in the new USAID/Georgia CDCS and relevant project/activity design documents meet Georgia's biodiversity conservation needs identified, and recommendations for how USAID/Georgia's new CDCS, and existing and future programming, can best support the needs identified

This assessment will be based on a review of the draft CDCS 2020-2025, as well as all relevant project/activity design documents. The Draft 2 report submitted to USAID for review shall be between 30-45 pages, excluding annexes and the Executive Summary.

E. DRAFT 3 OF FAA 119 (I.E., FINAL REPORT)**

Based on consolidated comments on Draft 2 of the report and as received from USAID Activity Manager, ECOS will prepare a final report for submission to USAID.

***The Assessment will be written in English and translated to Georgian (only report will be translated, without annexes), and submitted in electronic form readable in MS Word 2010 based on MS Word Times New Roman 12 or other legible font of similar size. Web URLs for information resources should be provided (if available). The FAA 119 Analysis Report must follow all USAID Branding and Graphic Standards (see http://www.usaid.gov/branding/gsm).*

Any data used to prepare the Assessment (except for the data protected by any formal agreements between the Contractor and interviewees and survey/focus group participants) will be presented in the MS Office compatible format suitable for re-analysis and submitted either by e-mail or on a CD or a flash drive to the Activity Manager. The Contractor must also submit quantitative dataset in a machine-readable format to the Development Data Library (DDL) as part of the Open Data Policy (https://data.usaid.gov/). The data should be fully documented and well organized for use by those not fully familiar with the Assessment. USAID will retain ownership of all Assessment records including interview transcripts or summaries, survey(s), datasets developed, copies of which are provided to the Activity Manager.

The Assessment should represent thoughtful and well-organized effort that includes sufficient local and global contextual information. Analysis findings should be based on facts, evidence, and data. Findings should be specific, concise and supported by reliable quantitative and qualitative evidence [i.e. there should not be words like "some", "many", "most" in the report and frequency of responses and absolute number of interviewed respondents should be given, e.g., five out of 11 experts agreed that …; 30 per cent of survey respondents reported that]. Conclusions should be supported by a specific set of findings.

The Assessment draft and final reports will follow the outline in Annex A. (attached), unless otherwise agreed during workplan development, and should include the following maps and tables:

a) Map of main ecosystems in the country;

b) Map of the forested areas and land uses;

c) Map of protected areas, including forest reserves;

d) Map of aquatic and marine resources;

e) Protected area status table with:

- *A list of all declared and proposed protected areas (national parks, wildlife reserves and refuges, forest reserves, sanctuaries, hunting preserves, etc.);*
- *Institution(s) responsible for the protection and management of each protected area;*
- *Area of coverage;*
- *Ecosystems contained in each protected area; and*
- *Protected area management plan status.*

f) Table of the status of natural resources outside protected areas with:

- *Land cover and land-use type (e.g., wetlands/freshwater sources, major catchment areas, agricultural ecosystems, etc.);*
- *Institution(s) responsible for management;*
- *An overview of the major threats and challenges to conserving biodiversity outside protected areas; and*
- *Economic potential.*

g) Table of conservation initiatives including:

- *A list of the main conservation initiatives implemented by government, donors, non-governmental organizations, private sector and universities;*
- *Brief evaluation of effectiveness;*
- *Implementation dates; and*
- *Funding levels.*

Annex A (attached) contains a suggested outline for the Assessment. Additional details for each section is provided in Annex B: FAA 118/119 Analysis Report Annotated Outline provided in the USAID, Foreign Assistance Act Sections 118/119 Tropical Forest and Biodiversity Analysis – Best Practices Guide, February 2017.

The Contractor will use either a cover memorandum or similar format to explain how comments provided by the Mission and other stakeholders (when solicited) were addressed in the final Assessment, if the final version differs substantially from the draft one.

B. TEAM MEMBER BIOS

Paola Bernazzani is a conservation biologist and biodiversity specialist with 20 years' experience in the environmental field. She is currently a principal at ICF where she manages and directs projects. She leads the conservation planning practice within the Eastern line of business. Paola's focus is the integration of science with policy and planning. She works throughout the US and internationally on environmental issues including endangered species compliance, regulatory strategies, conservation of rare species, and compensatory mitigation. She presents frequently on the role of science in the planning process and has published several articles, including papers on participant perspectives of habitat conservation plans and climate change in the regulatory environment. She is a reviewer for the journals *Conservation Biology* and *Environmental Management*. Paola has done trainings domestically and internationally, including stakeholder outreach, and she teaches regularly at UC Davis extension program. Paola has a Master of Science degree in wildlife biology from the Department of Environmental Science, Policy and Management at the University of California, Berkeley and a Bachelor of Arts degree in Environmental Studies and Anthropology from Yale University

Levan Mumladze is an associate professor of ecology and biodiversity at the Ilia State University (Tbilisi) and the Acting director of the Institute of Zoology (Tbilisi). He has 13 years of experience in biodiversity studies in the Caucasus region, primarily focused on invertebrate animal inventory and distribution, invasive species and community ecology. His specific research interests include species diversity and conservation in the Caucasus, biogeography of Caucasus invertebrate fauna (molluscs, mites, dragonflies, diplopods, etc.), community and metacommunity patterns and underlying mechanisms, and species interactions and coexistence phenomena in soil associated animals. He holds Bachelors and Masters of Science degrees in biology from Ivane Javakhishvili State University, and a PhD in Life Sciences from Ilia State University.

Elisa Perry is a Senior Associate at the Cadmus Group with over ten years' experience with international development programs in Eurasia. In the Caucasus, she has managed USAID- and Swedish International Development Agency-funded governance and democracy programs focusing on civil society, local government, and women's political participation in Georgia and Armenia. In 2010, she served as a fellow at the Caucasus Research Resource Center in Tbilisi, where she conducted in-depth quantitative and qualitative analysis on the social and economic statuses of Armenians, Azerbaijanis, and Georgians. A specialist on the Eurasia region, she has implemented multiple additional international programs in Armenia, Georgia, Russia, and Ukraine, for the U.S. government, UK DIFD, the World Bank, and private enterprises. She previously served as the lead Russia-Eurasia staffer on the U.S. House of Representatives Committee on Foreign Affairs Subcommittee on Oversight. She holds a Masters degree in Law and Diplomacy from the Fletcher School at Tufts University and a Bachelors degree in International Affairs from the Elliott School at the George Washington University.

Mary Kate (Ketevan) Ugrekhelidze holds Masters degrees in Natural Resources Management and Environmental Management from Ilia State University, Georgia and Kiel University, Germany. Since 2016, she has worked as a Lecturer, Researcher, and Master Program Coordinator Assistant at Ilia State University. Mary Kate has been actively involved in the development and day to day execution of the Natural Resources Management Masters Program, as well as teaching ecosystem/environmental management and economics related courses to master level students. As a researcher, she has been focusing on variety of environmental topics covering the areas of analysis and management of ecosystems and ecosystem services, and on floodplains restoration and management. As an

environmental specialist, she has been involved in a wide range of projects/assignments and worked with different multidisciplinary and multinational teams playing the role of assistant, expert or coordinator. Currently a Ph.D. student at Ilia State, her research is focused on floodplain management and sustainable us of ecosystem services therein.

C. LIST OF REFERENCE DOCUMENTS CONSULTED

Agency of Protected Areas (APA), Georgia. https://apa.gov.ge/en/. Accessed April 2019.

Akhalkatsi, Maia et al., Diversity and Genetic Erosion of Ancient Crops and Wild Relatives of Agricultural cultivars for Food: Implications for Nature Conservation in Georgia (Caucasus). Perspectives on Nature Conservation, February 2012: https://www.intechopen.com/books/perspectives-on-nature-conservation-patterns-pressures-and-prospects/diversity-and-genetic-erosion-of-ancient-crops-and-wild-relatives-of-agricultural-cultivars-for-food. Accessed July 2019.

Asia Development Bank. "Environmental Impact Assessment: Poti-Grigoleti-Kobuleti Bypass: Poti-Grigoleti Road Section (Lot 2, Stage 1). April 2019. http://www.georoad.ge/uploads/files/Poti-Grigoleti%20Road%20Section%20(Lot%202,%20Stage%201)%20-%20Final%20Draft.pdf. Accessed May 2019.

Balvanera, Patricia et al. "Chapter 4: The links between Biodiversity and Ecosystem Services." *Routledge Handbook of Ecosystem Services*. 1st Ed., pp 45-49. January 2016.

Bern Convention on the Conservation of European Wildlife and Natural Habitats website. https://www.coe.int/en/web/bern-convention/presentation. Accessed June 2019.

Bern Convention on the Conservation of European Wildlife and Natural Habitats website. Emerald Network sub-page. https://www.coe.int/en/web/bern-convention/emerald-network and https://rm.coe.int/updated-list-of-officially-adopted-emerald-sites-november-2018-/16808f184d. Accessed June 2019.

Butkhuzi, L. Breaking News. Leopard in Georgia. Caucasus Environment, 2, 2004.

Caucasus Nature Fund, "Caucasus Red Deer Spotted in Tusheti After Decades." August 27, 2014. https://www.caucasus-naturefund.org/caucasian-red-deer-spotted-in-tusheti-after-decades/. Accessed April 2019.

Central Intelligence Agency, "Georgia," in *The World Factbook* 2016-2017 (Washington, DC, 2016), https://www.cia.gov/library/publications/the-world-factbook/geos/gg.html. Accessed April 2019.

Convention on Biological Diversity website. https://www.cbd.int/. Accessed April 2019.

Convention on International Trade in Endangered Species of Wild Flora and Fauna website. https://www.cites.org/eng/. Accessed April 2019.

Convention on Wetlands of International Importance (Ramsar Convention). Georgia country page. https://www.ramsar.org/wetland/georgia. Accessed June 2019.

Council of Europe Landscape Convention website. https://www.coe.int/en/web/landscape. Accessed April 2019.

De Groot, R., B. Fisher, and M. Christie. The Economics of Ecosystems and Biodiversity, Ecological and Economic Foundations. United Nations Environment Programme, Geneva, Switzerland, 2010.

deWaal, Thomas. The Caucasus: An Introduction. Oxford 2019. 2nd Edition.

Djibladze, Mikhail Leonidovich et al., "Georgia," in *Encyclopedia Britannica* (January 2019), https://www.britannica.com/place/Georgia. Accessed April 2019.

Elizbarashvili et al. Georgian climate change under global warming conditions. Annals of Agrarian Science 15, 2017. p. 17-25.

Erkomaishvili, G. "Consumer Market for Mineral Water and Development Policy in Georgia." *World Academy of Science, Engineering and Technology International Journal of Economic and Management Engineering*. Vol. 9, No. 5, 2015. https://waset.org/publications/10001169/consumer-market-for-mineral-water-and-development-policy-in-georgia. Accessed April 2019.

European Bank for Reconstruction and Development (EBRD) Technical Cooperation Project to Assist the Government of Georgia with the Development of an Energy Efficiency Law. "Status of the energy Efficiency Law of Georgia with a focus on industry." June 5, 2018. http://www.economy.ge/uploads/files/2017/reitingebi/samrecvelo_energoefeqturoba/1_3_presentation_on_ee_law_and_industry_ebrd_unido_v1.pdf. Accessed June 2019.

European Union Water Initiative, Georgia: National Water Policy Dialogue on Integrated Water Resources Management report. Tbilisi, 2013. http://www.syke.fi/download/noname/%7B8CB20E57-CFAC-442F-AB08-A5132C337E99%7D/102943. Accessed April 2019.

Fauna and Flora International. "Conserving black sea sturgeon in Georgia" project description. https://www.fauna-flora.org/projects/conserving-black-sea-sturgeon-georgia. Accessed April 2019.

Gegechkori, Arnold.2018. Annals of Agrarian Science 16 (2018).

GiZ. Final Project Report: Pilot Testing in the Rioni River Basin Regarding Impacts from Hydropower including the Methodology, Risk Assessment Results, and a Check-List to Review EIA documents. 2017.

GiZ. Integrated Biodiversity Management South Caucasus page. https://biodivers-southcaucasus.org/. Accessed June 2019.

Global Mountain Explorer (GME) K2. U.S. Geological Survey. Available at https://rmgsc.cr.usgs.gov/gme/. Accessed June 2019.

Harrison, Paula et al. "Linkages between biodiversity attributes and ecosystem services: A systematic review." Ecosystem Services No. 9, September 2014.

Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. Global Assessment Report on Biodiversity and Ecosystem Services (draft). May 6. 2019. https://www.ipbes.net/global-assessment-report-biodiversity-ecosystem-services. Accessed May 2019.

International Hydropower Association. Georgia fact page. https://www.hydropower.org/country-profiles/georgia. Accessed April 2019.

IUCN. "Georgia - a Haven for Biodiversity." 7 December 2012. https://www.iucn.org/content/georgia-%E2%80%93-haven-biodiversity. Accessed: June 2019.

IUCN Red List of Threatened Species. https://www.iucnredlist.org/. Accessed April 2019.

Kikodze, D., Memiadze, N., Kharazishvili, D., Manvelidze, Z., & Müller-Schärer, H. The alien flora of Georgia. Joint SNSF SCOPES and FOEN publication, 2010.

Kobakhidze, Natia. "Sustainable Management of Biodiversity, South Caucasus." GIZ, December 2015. https://rbesp.rec-caucasus.org/uploads/news/5968ccc5e89cc.pdf. Accessed April 2019.

Koehnken, L. and M. Rintoul. 2018. Impacts of Sand Mining on Ecosystem Structure, Process and Biodiversity in Rivers. WWF. http://d2ouvy59p0dg6k.cloudfront.net/downloads/sand_mining_impacts_on_world_rivers__final_.pdf. Accessed May 2019.

Legislative Herald of Georgia. Environmental Assessment Code, 2017. https://www.matsne.gov.ge/en/document/view/3691981?publication=2. Accessed June 2019.

Legislative Herald of Georgia. Georgian Law on the System of Protected Areas, 2018. https://www.matsne.gov.ge/en/document/view/32968?publication=17. Accessed June 2019.

Lovgren, Stefan. "Two-thirds of the longest rivers no longer flow freely - and it's harming us." National Geographic, May 8, 2019. https://www.nationalgeographic.com/environment/2019/05/worlds-free-flowing-rivers-mapped-hydropower/. Accessed May 2019.

Matcharashvili, I. Problems and Challenges of Forest Governance in Georgia. Association Green Alternative, Tbilisi, 2012.

Ministry of Agriculture, Georgia. Strategy for Agricultural Development in Georgia 2015-2020. 2015. http://www.moa.gov.ge/Download/Files/227. Accessed April 2019.

Ministry of Environment and Natural Resources, Georgia. Georgia's Fifth National Report to the Convention on Biological Diversity. 2014. https://www.cbd.int/doc/world/ge/ge-nr-05-en.pdf. Accessed April 2019.

Ministry of Environment and Natural Resources, Georgia. Georgia's Intended Nationally Determined Contribution Submission to the UNFCCC. https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Georgia%20First/INDC_of_Georgia.pdf. Accessed June 2019.

Ministry of Environment and Natural Resources, Georgia. National Biodiversity Strategy and Action Plan of Georgia 2014-2020. Tbilisi, May 2014.

Ministry of Environment and Natural Resources, Georgia. Organizational Structure page. http://mepa.gov.ge/En/Structure. Accessed April 2019.

Ministry of Environmental Protection and Agriculture. Draft Law on Biological Diversity (unpublished). 2019.

Ministry of Environmental Protection and Agriculture of Georgia. Third National Environmental Action Programme of Georgia, 2017-2020. Tbilisi, 2018. http://mepa.gov.ge/En/Files/Download/1605. Accessed April 2019.

Ministry of Environmental Protection and Agriculture of Georgia. Regulation Document, Article 2,1, in Georgian, http://mepa.gov.ge/Ge/Files/ViewFile/15506. Accessed June 2019.

Ministry of Foreign Affairs of Georgia. International Agreements page. http://mfa.gov.ge/MainNav/ForeignPolicy/InternationallegalAgreements.aspx. Accessed April 2019.

Mumladze, Levan, "Faunal biodiversity research in the Republic of Georgia." Biodiversity and Conservation manuscript draft (unpublished). April 2019.

Myers, N., R.A. Mittermeier, C.G. Mittermeier, G.A.B. da Fonseca, and J. Kent. 2000. Biodiversity hotspots for conservation priorities. Nature (403): 853–858. Published 24 February 2000.

National Democratic Institute. "NDI Poll: Heading into the Presidential Election, Georgians concerned about country's direction, economy, and environment; Dissatisfied with Political Options". August 1, 2018. https://www.ndi.org/sites/default/files/NDI%20Georgia%20poll%20press%20release_%20June%202018_ENG_0.pdf. Accessed June 2019.

National Statistics Office, Georgia. Agriculture page. http://www.geostat.ge/index.php?action=page&p_id=428&lang=eng and Household Income page https://www.geostat.ge/en/modules/categories/50/households-income. Accessed April and June 2019.

National Tourism Administration of Georgia. 2017 Statistics. https://gnta.ge/ge/publication/საქართველოს-ტურიზმის-სტა/. Accessed June 2019.

Olson, D. M., and E. Dinerstein. The Global 200: Priority ecoregions for global conservation. Annals of the Missouri Botanical Garden 89(2), 2002.

Padmalal, D., K. Maya, S. Sreebha, and R. Sreeja. Environmental Geology 54(4), 2008.

Parliament of Georgia. "The Committees supported the Bill on Structure, Authority and Activity Rule of the Government of Georgia at the joint sitting." November 28, 2017. http://www.parliament.ge/en/media/axali-ambebi/komitetebis-gaertianebul-sxdomaze-saqartvelos-mtavrobis-struqturis-uflebamosilebisa-da-saqmianobis-wesis-shesaxeb-saqartvelos-kanonshi-cvlilebis-shetanis-taobaze-kanonproeqts-mxari-dauchires.page. Accessed April 2019.

Patarkalashvili, T. "Forest biodiversity of Georgia and endangered plant species." Annals of Agrarian Science. June 29, 2017.

Slodowicz, D., Descombes, P., Kikodze, D., Broennimann, O., Müller-Schärer, H. 2018. Areas of high conservation value at risk by plant invaders in Georgia under climate change. Ecology and Evolution, 8, 2018.

Tielidze, Levan G. and Roger D. Wheate. The Greater Caucasus Glacier Inventory (Russia, Georgia, Azerbaijan). The Cryosphere, 12, 2018.
https://pdfs.semanticscholar.org/4e44/c43d94fbffe4700c0c812d02f498d89fbabc.pdf. Accessed June 2019.

Torchinava, Paata. "Georgia Case Study." Prepared for FAO as part of the State of the World's Forests 2016 (SOFO). http://www.fao.org/3/a-C0181e.pdf. Accessed April 2019.

Torres, A., J. Brandt, K. Lear, and J. Liu. A looming tragedy of the sand commons. Science 357 (6355). p. 970-971.

Turner, Will et al., "Global Biodiversity Conservation and the Alleviation of Poverty," BioScience 62, no. 1 (2012): 85-92. doi:10.1525/bio.2012.62.1.13

USAID. Biodiversity Analysis Update for Georgia: Final Report. December 2009.

USAID. Biodiversity Analysis Update for Georgia: Georgia Biodiversity Integration Opportunities. May 2012.

USAID. Biodiversity Assessment for Georgia. February 2000.

USAID. Climate Risk Profile: Georgia, Washington, D.C., May 2017.

USAID. Foreign Assistance Act 119 Biodiversity Analysis: Serbia Biodiversity Analysis. July 2018.

USAID. Foreign Assistance Act Sections 118/119 Tropical Forest and Biodiversity Analysis: Best Practices Guide. February 2017.

USAID. The Georgian Road Map on Climate Change Adaptation. Tbilisi, 2016.

USAID/Georgia. Country Development Cooperation Strategy for Georgia. 2013-2020.

USAID/ Georgia. Elections and Political Processes Project Appraisal Document (PAD), CY2019 through CY2023. November 6, 2018.

UN Convention to Combat Desertification website. https://www.unccd.int/. Accessed April 2019.

UNDP. Climate Change Adaptation in Europe and Central Asia. November 2018.
https://www.undp.org/content/undp/en/home/librarypage/climate-and-disaster-resilience-/climate-change-adaptation-in-europe-and-central-asia.html. Accessed June 2018.

UNDP, Georgia-Human Development Indices and Indicators: 2018 Statistical Update (2018), http://hdr.undp.org/en/countries/profiles/GEO. Accessed April 2019

UNDP and the Global Environment Facility, "Enhancing financial sustainability of the Protected Area system in Georgia" project document. 2018.

UNECE, "3rd Environmental Performance Review of Georgia." February 2016. https://www.unece.org/fileadmin/DAM/env/epr/epr_studies/ECE_CEP_177.pdf. Accessed April 2019.

UNECE Convention on Access to Information, Public Participation in Decision-making and access to Justice Earth Matters website. http://ec.europa.eu/environment/aarhus/index.htm. Accessed April 2019.

UNEP and World Wildlife Fund. TEEB Scoping Study for Georgia. United Nations Environment Programme (UNEP), Geneva, Switzerland, 2013. http://doc.teebweb.org/wp-content/uploads/2014/01/TEEB-Scoping-Study-for-Georgia_2013WEB.pdf. Accessed April 2019.

UN Economic Commission for Europe and Food and Agricultural Organization of the United Nations. "Forests and Water: Valuation and Payments for Forest Ecosystem Services." 2018. https://www.unece.org/fileadmin/DAM/timber/publications/sp-44-forests-water-web.pdf. Accessed April 2019.

UN Food and Agricultural Organization. AQUASTAT Georgia fact page. http://www.fao.org/nr/water/aquastat/countries_regions/GEO/. Accessed April 2019.

UN Food and Agricultural Organization. "Georgia at a glance" fact page. http://www.fao.org/georgia/fao-in-georgia/georgia-at-a-glance/en/. Accessed April 2019.

UN Food and Agriculture Organization. The State of Mediterranean and Black Sea Fisheries. General Fisheries Commission for the Mediterranean. Rome. 2018.

UN Framework Convention on Climate Change (UNFCCC) website. https://unfccc.int/. April 2019.

World Bank Group. "Georgia," in Europe and Central Asia Macro Poverty Outlook. 2019. http://pubdocs.worldbank.org/en/107191492012467509/mpo-eca.pdf. Accessed April 2019.

World Bank Group, "Georgia: Country Environmental Analysis." June 2015. http://documents.worldbank.org/curated/en/293731468001755898/pdf/ACS13945-WP-P147475-Box391501B-PUBLIC-6-26-15.pdf. Accessed April 2019.

World Bank Group. "Georgia: Forests, Livelihoods, and Poverty Linkages in the Forest Communities of Georgia - Evidence and recommendations from a 2016 household survey" (translation). March 2018. https://www.profor.info/sites/profor.info/files/Forests%2C%20Livelihoods%2C%20and%20Poverty%20Linkages%20in%20the%20Forest%20Communities%20of%20Georgia%20%20%28in%20English%29.pdf. Accessed April 2019.

World Bank Group. "South Caucasus Gender Assessment Technical Assistance Report – Value Chain Assessment." June 2017. http://documents.worldbank.org/curated/en/490611518797391261/pdf/123474-WP-P160432-PUBLIC-ADD-SERIES-ReportValueChainSelectionGeorgia.pdf. Accessed April 2019.

World Resources Institute, "2005: Facts on Biodiversity - A summary of the Millennium Ecosystem Assessment Biodiversity Synthesis." https://www.millenniumassessment.org/documents/document.354.aspx.pdf. Accessed April 2019.

World Travel & Tourism Council, "Georgia: 2019 Annual Research: Key Highlights," 2019. https://www.wttc.org/-/media/files/reports/economic-impact-research/countries-2019/georgia2019.pdf. Accessed April 2019.

World Travel & Tourism Council, Travel & Tourism Power and Performance Report, 2018. https://www.wttc.org/-/media/files/reports/2018/power-and-performance-rankings-2018.pdf. Accessed April 2019.

World Wildlife Fund report. "Saving sturgeons: a global report on their status and suggested conservation strategy." 2016. http://d2ouvy59p0dg6k.cloudfront.net/downloads/saving_sturgeons_report_on_status_and_suggested_cons__strategy_low_res_may2016.pdf. Accessed: June 2019.

Zhang, X., Davidson, E.A., Mauzerall, D.L., Searchinger, T.D., Dumas, P., and Shen, Y. Managing nitrogen for sustainable development. Nature 400, 415.3. 2015. http://www.umces.edu/sites/default/files/profiles/files/Ranking%20Method_submit_to_SDSN_SNMI_20160705_0.pdf

D. INTERVIEW TEMPLATE

NOTE: This is a preliminary draft questionnaire. The questionnaire will continue to evolve as additional information is gathered. The questions are not necessarily sequential; they can be used to help guide a semi-structured interview and information gathering process.

Stakeholder Consultation Questionnaire – USAID/Georgia FAA 119 Biodiversity Analysis

Name: _____ **Date:** _____

Title: _____ **Organization:** _____

Primary Locations of Interest:

_____

Cooperating Organizations:

_____

Source(s) of Funding:

_____

BIODIVERSITY (Species & Ecosystem including Aquatic Resources)

1. Are biodiversity resources (species and ecosystems) under threat in Georgia?
2. What are the top 2 or 3 threats[138] to biodiversity in Georgia?
3. Are biodiversity resources increasing or decreasing?
4. What are some of the factors (e.g., underlying drivers[139]) leading to the increase or decline of biodiversity, in priority order?
5. Which are some of the species/ecosystems experiencing significant changes?
6. What can be done to either: encourage/promote the increase or stop/prevent the decline of species/ecosystems?

CLIMATE CHANGE

7. Are climatic changes affecting Georgia? How?
8. What are some activities either accelerating climate change or mitigating climate change effects in Georgia?
9. Are you aware of any proposed activities to address climate change issues in Georgia?

[138] A direct threat to biodiversity is a human action or unsustainable use that immediately degrades biodiversity (e.g., deforestation resulting for agricultural expansion, overfishing.)
[139] A driver is a constraint, opportunity or other important variable that positively or negatively influences direct threats (e.g., demand for seafood).

GENERAL QUESTIONS

10. What are the links between the environment (e.g., biodiversity, ecosystems, water / air quality, wildlife corridors and habitats, vegetation, etc.) and:
    a. Agriculture (e.g., subsistence or commercial)
    b. Nutrition
    c. Mining (e.g., manganese, copper, quarry stone)
    d. Energy Production (e.g., hydroelectric, oil and gas, wood fuels)
    e. Natural Resource Use (e.g., encroachment, non-timber forest products, timber)
    f. Fisheries
    g. Wildlife trade (e.g., skins, animal parts)
    h. Water, Sanitation, and Hygiene (WASH)
    i. Politics / Governance (e.g., government regulations, corruption, armed forces, ministries)

11. What are the opportunities for protecting and conserving biodiversity from any identified detrimental types of activities?
12. Are there specific governmental or international policies that encourage or discourage the conservation of biodiversity in Georgia? (please specify referenced policies)
13. Are there specific departments, institutions, organizations, or donors that either facilitate or impede conservation efforts in Georgia?

E. TABLE OF KEY GOVERNMENT-ADMINISTERED PROTECTED AREAS

There are 88 areas in Georgia administered by the APA. The table below provides a list and details on all territories that are administered directly by the APA. Additional areas that fall under the APA's administration include strict nature reserves, managed reserves, natural monuments, and protected landscapes. It should also be noted that there are seven protected areas in the breakaway regions (Abkhazia and South Ossetia), totaling in 67141 ha.[140]

NAME	RESPONSIBLE INSTITUTION	DATE OF ESTABLISHMENT	AREA (HA)	ECOSYSTEMS	MUNICIPALITY
Ajameti Managed Reserve	APA	1946	4991	Lowland riparian forest	Baghdati and Zestafoni
Algeti National Park	APA	1965	6822	Mountain mixed broadleaf forest, Coniferous forest, Rivers	Tetritskaro
Batsara-Babaneuri Protected Area	APA	1935/2003	3848	Mixed deciduous mountain forest, rivers	Akhmeta
Borjomi-Kharagauli National Park	APA	1935	107083	Mountain mixed broadleaf forest, Coniferous forest, subalpine and alpine meadows, Rivers	Borjomi, Kharagauli, Akhaltsikhe, Adigeni, Khashuri and Baghdati
Chachuna Managed Reserve	APA	1965	5200	Riparian Forest, semiarid grasslands	Dedoplistskaro
Imereti Caves Protected Area	APA	1935	>1000	Caves	Tskaltubo, Khoni, Terjola, Tkibuli

[140] Agency of Protected Areas (APA), Georgia. https://apa.gov.ge/en/. Accessed April 2019.

NAME	RESPONSIBLE INSTITUTION	DATE OF ESTABLISHMENT	AREA (HA)	ECOSYSTEMS	MUNICIPALITY
Javakheti Protected Areas	APA	2011	16614	High mountain lakes	Ninotsminda, Akhalkalaki
Kazbegi National Park	APA	1976	78543	High mountain mixed broadleaf forest; Subalpine and alpine meadows;	Stepantsminda
Kintrishi Protected Area	APA	1959	13514	Mountain mixed broadleaf forest; Subalpine meadows; Rivers	Kobuleti
Kobuleti Protected Area	APA	1998	466	Peat bogs	Kobuleti
Kolkheti National Park	APA	1998	44309	Lowland forest; Bogs; Lakes; Rivers	Zugdidi, Khobi, Senaki, Abasha, Lanchkhuti
Lagodekhi Protected Area	APA	1912	24255	Mountain mixed broadleaf forests, Subalpine and alpine meadows, Glacial lakes, rivers	Lagodekhi
Machakhela National Park	APA	2012	7333	Mixed deciduous broadleaf forest	Khelvachauri
Mariamjvari State Reserve	APA	1935	1022	Mixed deciduous broadleaf forest, Coniferous forest	Sagarejo
Mtirala National Park	APA	2007	15699	Humid mixed deciduous broadleaf forest	Kobuleti, Khelvachauri, Keda
Tbilisi National Park	APA	1973/2007	21036	Mixed deciduous broadleaf forest	Tbilisi, Mtskheta

NAME	RESPONSIBLE INSTITUTION	DATE OF ESTABLISHMENT	AREA (HA)	ECOSYSTEMS	MUNICIPALITY
Tusheti National Park	APA	2003	12627	High Mountain mixed forest, subalpine and alpine meadows	Akhmeta
Vashlovani Protected Areas	APA	1935	35292	Arid and semiarid savannas	Dedoplistskaro

F. TABLE OF NATIONAL LAWS AND STRATEGIES RELATED TO BIODIVERSITY

TABLE 9. NATIONAL LAWS AND STRATEGIES

NAME	TYPE	DATE	DESCRIPTION
Agricultural Land Ownership Code	Law	1996	Ensures improvement to Georgia's agricultural land based on rational use of resources, and avoidance of splitting and unsustainable use of the land plots. The law defined the rules for acquisition and selling land and participation of the state in agricultural land management. Considers ownership issues and restrictions of land alienation in case of co-ownership.[141]
Biodiversity Code (Draft)	Law	2020 (expected)	Mechanism to harmonize Georgian legislation with EU Association Agreement requirements. Law intends to establish a legal background for the creation of the Emerald Network and special protected areas for bird species; enhances legal protections of critically endangered species; provides a legal framework for accessibility of genetic resources and relative traditional knowledge and equitable sharing of benefits arising from utilization. Also provides for significant changes aimed at regulation of biological resources use, including hunting and fishing.[142]
Environmental Impact Assessment Code	Law	2018	Establishes a legal basis for regulating issues related to projects and strategic documents, and which implementation may have significant impact on the environment, human life, and health. It regulates the following: (i) procedures related to environmental impact assessment, strategic environmental assessment, public participation in decision-making, trans boundary environmental impact assessment; (ii) defines rights and obligations of the developer, the planning authority, the public and the competent authorities in the course of decision-making envisaged by this Code; (iii) describes procedures of issuing Environmental Decision; and (iv) exemption rules.[143]
Environmental Protection Code	Law	1996	Regulates the legal relationship between the state and environmental protection and the use of nature on all Georgian territory.[144]

[141] Asia Development Bank. "Environmental Impact Assessment: Poti-Grigoleti-Kobuleti Bypass: Poti-Grigoleti Road Section (Lot 2, Stage 1). April 2019. http://www.georoad.ge/uploads/files/Poti-Grigoleti%20Road%20Section%20(Lot%202,%20Stage%201)%20-%20Final%20Draft.pdf. Accessed May 2019.
[142] Ministry of Environment and Natural Resources, Georgia. Georgia's Fifth National Report to the Convention on Biological Diversity. 2014. https://www.cbd.int/doc/world/ge/ge-nr-05-en.pdf. Accessed April 2019.
[143] Asia Development Bank. "Environmental Impact Assessment: Poti-Grigoleti-Kobuleti Bypass: Poti-Grigoleti Road Section (Lot 2, Stage 1). April 2019. http://www.georoad.ge/uploads/files/Poti-Grigoleti%20Road%20Section%20(Lot%202,%20Stage%201)%20-%20Final%20Draft.pdf. Accessed May 2019.
[144] Ibid.

TABLE 9. NATIONAL LAWS AND STRATEGIES			
NAME	TYPE	DATE	DESCRIPTION
Forestry Code (Draft)[145]	Law	Presently under consideration by Parliament; expected to be passed in late 2019	To replace existing Forestry Code developed in 1999 and last updated in 2017. It will provide a new system of forestry management and is expected to result in better economic distribution of forest resources. The draft includes a mechanism for conducting inventory, and perhaps most importantly, will limit the "cutting" or illegal logging practices of local communities by making fuelwood distribution the purview of the National Forestry Agency. Under the law, community members will no longer be able to procure fuelwood from protected areas or other public forest spaces and instead, fuelwood will be distributed by the NFA based on market demand. Details of how this effort will be staffed or mechanisms for service for those citizens living in very remote areas are limited.
Genetically Modified Living Organisms Code	Law	2014	Bars the introduction of genetically modified organisms (GMOs) into the country's natural environment. Distribution of GMOs is allowed, provided they are registered and properly labelled. GMOs can also be developed for scientific research, which requires a license.[146]
National Biodiversity Strategy and Action Plan (2nd) (NBSAP)	Strategy	2014-2020	Sets 21 national goals for the protection of biodiversity, including those targeted at preservation of the values of biodiversity, raising public awareness regarding the significance of biodiversity and benefits derived therein, integration of biodiversity aspects, enhancement of the biodiversity status, and mitigation of threats to biodiversity. Major goals include improving management effectiveness and financial sustainability of protected areas for biodiversity status; increased societal awareness on values and threats to biodiversity; strengthened knowledge on biodiversity based on effective monitoring. Designed to support fulfillment of EU Association Agreement criteria.[147]
National Energy Efficiency Action Plan (NEEAP)	Strategy	2017-2020	Spearheaded with support from the EBRD and the EU, the action plan was designed to improve the legal and regulatory framework for energy efficiency in line with EU legal and requirements and policies, through policy and investment

[145] The current Forestry Code (developed 1999, most recent update 2017) regulates forestry management, use and protection and limits activities to ensure resource protection.
[146] UNECE, "3rd Environmental Performance Review of Georgia." February 2016. https://www.unece.org/fileadmin/DAM/env/epr/epr_studies/ECE_CEP_177.pdf. Accessed April 2019, pg. 60.
[147] Ministry of Environment and Natural Resources, Georgia. Georgia's Fifth National Report to the Convention on Biological Diversity. 2014. https://www.cbd.int/doc/world/ge/ge-nr-05-en.pdf. Accessed April 2019.

TABLE 9. NATIONAL LAWS AND STRATEGIES			
NAME	TYPE	DATE	DESCRIPTION
			measures. An energy efficiency law is anticipated to result.[148]
National Environmental Action Plan (3rd) (NEAP-3)	Strategy	2017-2021	Sets forth the Government of Georgia's objectives with regard to sustainable, balanced development where the quality of the environment is considered equally along with socio-economic challenges. Strategic objectives include: Improving the status of the environment and ensuring the protection/sustainable use of natural resources and preventing/minimizing risks that threaten human health and the welfare of the population; Increasing compliance with the obligations under regional and global environmental agreements to which Georgia is a Party and the further approximation with the EU's overall environmental policies, framework legislation, and directive-specific requirements; Increasing the capacities of administrative structures required to ensure efficient environmental management and the enforcement of environmental legislation; Promoting sustainable development through the integration of environmental aspects into social economic sector policies.[149]
National System of Biodiversity	Strategy	2008	Begun in 2008, designed to assess the status of biodiversity, intensity of threats affecting it and effectiveness of implemented measures. Developed a biodiversity monitoring concept with 25 indicators. Also developed a website to support the national system for biodiversity monitoring. Findings have included on intensity of fisheries, total areas of protected areas, forest areas, forest diseases, forest fires, reforestation/ afforestation, areas under organic farming, financial resources for nature conservation, and fragmentation of landscape.[150] Presently supported by a UNDP initiative.
Protected Areas System Code	Law	1996	Provides legal footing for the country's protected areas network, including planning, establishing, and maintaining all protected areas. Describes funding, ownership forms, and allowed and prohibited

[148] European Bank for Reconstruction and Development (EBRD) Technical Cooperation Project to Assist the Government of Georgia with the Development of an Energy Efficiency Law. "Status of the energy Efficiency Law of Georgia with a focus on industry." June 5, 2018. http://www.economy.ge/uploads/files/2017/reitingebi/samrecvelo_energoefeqturoba/1_3_presentation_on_ee_law_and_industry_ebrd_unido_v1.pdf. Accessed June 2019.

[149] Ministry of Environment and Natural Resources, Georgia. National Biodiversity Strategy and Action Plan of Georgia 2014-2020. Tbilisi, May 2014.

[150] Ministry of Environment and Natural Resources, Georgia. Georgia's Fifth National Report to the Convention on Biological Diversity. 2014. https://www.cbd.int/doc/world/ge/ge-nr-05-en.pdf. Accessed April 2019, page 6.

TABLE 9. NATIONAL LAWS AND STRATEGIES

NAME	TYPE	DATE	DESCRIPTION
			activities. An update has been considered in the recent past, although drafting has not begun.[151]
Red List and Red Book Code[152]	Law	2003	Provides the legal definitions of Red List and Red Book of endangered species and defines the structure of the List. Outlines the relevant procedures for including, revising and updating species in the Red List.[153]
Socio-Economic Development Strategy (Georgia 2020)	Strategy	2014-2020	Commits Georgia to internationally accepted principles of sustainable development. Three main principles: Boosting productive sectors of the economy; Fostering inclusive growth and social equity; and Ensuring environmental safety and sustainability through the prevention of natural disasters and the rational use of natural resources. Treats environmental issues mostly in relation to infrastructure development, stressing the need to lessen impacts on the environment and reduce risks. Calls for adoption of sustainable management of the forestry sector that would decrease the costs of forest degradation and stimulate economic growth by improvement of ecosystem services.[154]
Strategy for Agricultural Development in Georgia	Strategy	2015-2020	Introduces good agricultural practices, which will mitigate environmental pollution through optimal application of chemical fertilizers and substances; refinement of agrarian ecosystem and natural grassland management systems; introduction of the system for biofarm establishment; encouragement, sustainable management, and certification. Includes a chapter dedicated to agricultural biodiversity, indicating that conservation and sustainable use of agricultural biodiversity have a special role in the development of agriculture and recognizing the role of local farmers and breeders in the conservation and improvement of genetic resources.[155]
Waste Management Code	Law	2015	Integrates the country's waste management framework, after several aborted attempts in the 2000s. Clearly delineates the roles and

[151] UNDP and the Global Environment Facility, "Enhancing financial sustainability of the Protected Area system in Georgia" project document. 2018, pg. 6.
[152] It is anticipated that the new Forestry Code will obviate the need for a separate Red List and Red Book code as the new code will include species protection provisions.
[153] Asia Development Bank. "Environmental Impact Assessment: Poti-Grigoleti-Kobuleti Bypass: Poti-Grigoleti Road Section (Lot 2, Stage 1). April 2019. http://www.georoad.ge/uploads/files/Poti-Grigoleti%20Road%20Section%20(Lot%202,%20Stage%201)%20-%20Final%20Draft.pdf. Accessed May 2019.
[154] Ministry of Environment and Natural Resources, Georgia. Georgia's Fifth National Report to the Convention on Biological Diversity. 2014. https://www.cbd.int/doc/world/ge/ge-nr-05-en.pdf. Accessed April 2019, page 51.
[155]Ministry of Environment and Natural Resources, Georgia. Georgia's Fifth National Report to the Convention on Biological Diversity. 2014. https://www.cbd.int/doc/world/ge/ge-nr-05-en.pdf. Accessed April 2019, page 52. Also: Ministry of Agriculture, Georgia. Strategy for Agricultural Development in Georgia 2015-2020. 2015. http://www.moa.gov.ge/Download/Files/227. Accessed April 2019.

TABLE 9. NATIONAL LAWS AND STRATEGIES			
NAME	TYPE	DATE	DESCRIPTION
			responsibilities of the national and municipal authorities. Aims to prevent waste generation and increase re-use and recycling.[156]
Water Code	Law	1997	Regulates water use, defining rights and obligations of water users. Also sets out liability of all natural and legal persons to prevent pollution of catchment basins, water reservoirs, snow and ice covers, glaciers, permanent snow cover with industrial, household and other wastes, and emissions which may cause deterioration of underground water quality. It prohibits piling of industrial and household wastes near the public water headwork's and in their sanitation zones; bans construction of facilities and implementation of any other activity which may cause water pollution; and sets requirements for forest use within water protection zones.[157]
Wildlife Code	Law	1997	The law regulates wildlife protection and use including hunting and fishing. It ensures protection and restoration of wildlife, its habitats, preservation and sustainability of species diversity and genetic resources. It creates of conditions for sustainable development while legally ensuring wildlife protection.[158]

[156] UNECE, "3rd Environmental Performance Review of Georgia." February 2016. https://www.unece.org/fileadmin/DAM/env/epr/epr_studies/ECE_CEP_177.pdf. Accessed April 2019,

[157] Asia Development Bank. "Environmental Impact Assessment: Poti-Grigoleti-Kobuleti Bypass: Poti-Grigoleti Road Section (Lot 2, Stage 1). April 2019. http://www.georoad.ge/uploads/files/Poti-Grigoleti%20Road%20Section%20(Lot%202,%20Stage%201)%20-%20Final%20Draft.pdf. Accessed May 2019.

[158] Ibid.

G. KEY CONSERVATION INITIATIVES

PROJECT NAME	IMPLEMENTER/ FUNDER	DURATION (DATES OF PROJECT)	FUNDING AMOUNT	PURPOSE
Advancing Integrated Water Resources Management across the Kura River Basin through Implementation of the Transboundary Agreed Actions and National Plans (Regional)	UNDP/GEF	2015-2020	200.3M USD	Integrated water resources management in the Kura river basin project to address water-energy-food-ecosystem security nexus with integrated flow management through the implementation of agreed actions in the National Action Plan.
Conserving Migrating Raptors in Western Georgia	Flora and Fauna International	Ongoing	N/A	The illegal and unsustainable trade in raptors is significantly affecting a number of species including the saker falcon, Eurasian sparrowhawk, northern goshawk and peregrine falcon, which are targeted for falconry. FFI is seeking to address these threats by working closely with falconers' associations and in cooperation with relevant government agencies to regulate the practice of falconry and to stop illegal international trade in birds of prey.
Conservation of Leopard in the Southern Caucasus	World Wildlife Fund - Georgia / WWF-Switzerland and WWF-Germany	2016-2019	150K Euro	The threatened Caucasian leopard (Panthera pardus ciscaucasica) is identified as a main focal species under threat. Although some conservation measures implemented recently brought some positive results in terms of stabilization of prey population and there have been increased sightings of leopards, the population of leopards is still too small and fragmented to secure the long-term survival. The project area is part of the current leopard range; the area plays crucial role for the resettlement of leopards in

PROJECT NAME	IMPLEMENTER/ FUNDER	DURATION (DATES OF PROJECT)	FUNDING AMOUNT	PURPOSE
				the region. The project includes the establishment of leopard caretaker networks consisting of local volunteers, and a feasibility study of compensation and prevention mechanisms to reduce human-leopard conflict in a leopard distribution area.
Conserving Black Sea Sturgeon in Georgia	Flora and Fauna International	2017 - Ongoing	N/A	In 2017, FFI started a new conservation initiative to better protect the Rioni river and its sturgeon species. Working with the government, WWF Caucasus, and a range of local stakeholders including local fishers, the project aims to reduce the poaching and illegal trade in sturgeon products on local markets and to address the further loss of spawning habitat.
Developing a Guideline and Checklist to include Biodiversity into Environmental Impact Assessment for Hydro Power Plants	REC Caucasus/ European Commission	2018-2019	N/A	The overall objective of the project is to develop a guideline and checklist to include Biodiversity into EIAs for Hydro Power Plants (HPP) in accordance to current Georgian legislation, best international practice, and Georgian country contexts.
Enhancing Financial Sustainability of the Protected Area System	UNDP/GEF	October 2018 – September 2023	9,785,000 USD	Projects provides funding to 12 target protected areas, supporting operating costs, site-level technical assistance and capacity building, financial-administrative planning, budgeting and accounting, tourism development, management effectiveness assessment, and operational management. It also supports awareness raising to improve societal acceptance and support of protected areas.

PROJECT NAME	IMPLEMENTER/ FUNDER	DURATION (DATES OF PROJECT)	FUNDING AMOUNT	PURPOSE
European Neighbourhood Programme for Agriculture and Rural Development (ENPARD III)	UNDP/EU	January 2018 – November 2022	1,738,308 USD	Program aims to reduce rural poverty and promote rural development in Georgia, boost development potential of rural areas, and create economic and social opportunities for people beyond agricultural activities. It includes initiatives to improve environmental protection, sustainable management of natural resources and climate action throughout Georgia, including the Adjara Autonomous Republic.
GEF SGP Sixth Operational Phase-Strategic Implementation using STAR Resources, Tranche 2 (Part IV) (Global)	UNOPS/GEF	2017-present	39.1M USD	Project supports the creation of global environmental benefits and the safeguarding of the global environment through community and local solutions that complement and add value to national and global level action.
Generating Economic and Environmental Benefits from Sustainable Land Management for Vulnerable Rural Communities of Georgia	UNEP/GEF	2018-2021	6.25M USD	Program develops and strengthens sustainable land management (SLM) practices and builds capacity at the municipal level for applying for national protections/ support.
Improving the Agriculture Sector in Georgia	UN FAO/ EU	January 2018 – November 2022	12M EURO	Project improves access to finance, better services and inputs for farmers, rural households, cooperatives and other small and medium enterprises in rural areas. These advantages – along with and improved capacities in Georgia's Ministry of Environment Protection and Agriculture – are expected to make the country's agricultural sector more competitive.

PROJECT NAME	IMPLEMENTER/ FUNDER	DURATION (DATES OF PROJECT)	FUNDING AMOUNT	PURPOSE
Integrated Biodiversity Management, South Caucasus (IBiS) (Armenia, Azerbaijan and Georgia)	GIZ / German Federal Ministry for Economic Cooperation and Development (BMZ); Austrian Development Cooperation (through Austrian Development Agency)	2015 to 2019	EUR 19,450,000 (Armenia, Azerbaijan and Georgia)	Within the framework of the Caucasus Initiative of the German government, IBiS cooperates primarily with the environment ministries of the three different countries of the South Caucasus. The program follows a multi-level approach. At national level, it promotes the development or revision of biodiversity strategies and regulations, particularly in forest and pasture management, and in erosion control. The experience gained from the pilot measures at district, municipal and local levels are incorporated into this process. As part of these pilot measures, relevant actors are provided with the skills needed to implement integrated approaches for sustainable management of biodiversity and ecosystem services.
Irrigation and Land Market Development Project	Ministry of Environment Protection and Agriculture and Ministry of Justice/ World Bank	2014-2021	50M USD	The objective of the project is to: (i) improve delivery of irrigation and drainage services in selected areas and (ii) develop improved policies and procedures as a basis for a national program of land registration. There are three components to the project: (i) irrigation and drainage improvement; (ii) land market development and financing of a pilot phase of a land registration program to redefine and test policies for registration of agricultural land; this will eventually inform the design of a national land registration program; and (iii) project management.

PROJECT NAME	IMPLEMENTER/ FUNDER	DURATION (DATES OF PROJECT)	FUNDING AMOUNT	PURPOSE
Promoting Accelerated Uptake of Environmental Technologies and Promotion of Best Practices for Improved Water, Chemicals, and Waste Management in the Black Sea Basin (Regional)	EBRD/GEF	2017 - ?	28.3M USD	The project will support investments tackling land-based and water-based pollution, improve systems for water management in coastal hotspots, water and pollution management in the Black Sea drainage basin, and will aim to improve management of harmful chemicals and waste with particular focus on private sector operations in the eligible countries.
Promotion of Ecological Corridors in the South Caucasus (Regional)	World Wildlife Fund - Georgia/ KFW	2015-2020	8M Euro	The foundation of this new concept is biodiversity conservation at the landscape level and increasing the involvement of local citizens. Such a large-scale project will ensure the overall sustainability of WWF-Caucasus Programme in the region. The project will provide financial resources in support of environmentally sustainable land use practices in selected ecological corridors, thus connecting protected areas to ensure their biological stability. This will contribute to the conservation of biodiversity in Armenia, Azerbaijan and Georgia without reducing income of the poor part of rural population.
Strengthening Capacities of Stakeholders for the Implementation of the Strategy for Agricultural Development in Georgia 2015-2020 and the Rural	UN FAO/ Austrian Development Agency	December 2018 – November 2022	2.2M USD	Project contributes to increased competitiveness of the agricultural sector, increased food production, and reduction of rural poverty, with a focus on reduction of inequality.

PROJECT NAME	IMPLEMENTER/ FUNDER	DURATION (DATES OF PROJECT)	FUNDING AMOUNT	PURPOSE
Development Strategy of Georgia 2017-2020				
Support to Eligible Parties to Produce the Sixth National Report to the CBD (Europe, CIS and Mongolia)	UNEP/GEF	2017-2019	1.52M USD	The project provides financial and technical support to GEF-eligible Parties to the Convention on Biological Diversity (CBD) in their work to develop high quality, data driven sixth national reports (6NR) that will improve national decision-making processes for the implementation of NBSAPs; that report on progress towards achieving the Aichi Biodiversity Targets (ABTs) and inform both the fifth Global Biodiversity Outlook (GBO5) and the Global Biodiversity Strategy of 2021 – 2030.
Supporting Sustainable Wastewater Management	Georgia Municipal Development Fund, Ministry of Finance of Georgia/ World Bank	2013-2020	12.57M USD	The project promotes sustainable wastewater management in Georgia and pilots the implementation of wastewater treatment plants. The first component of the project will finance studies, consulting services, training, workshop and study tours. The project also supports investment grants.
Technical Assistance to Support the Establishment of a National Animal Identification and Traceability System (NAITS) in Georgia	UN FAO/ Swiss Development Cooperation (SDC), Austrian Development Agency (ADA)	December 2016 - November 2020	5.5M USD	The project aims to establish the integrated EU compliant National Animal Identification and Traceability System in Georgia for cattle and small ruminants. It enhances the competitiveness of Georgian agriculture achieved through improvement of food safety and animal health standards.

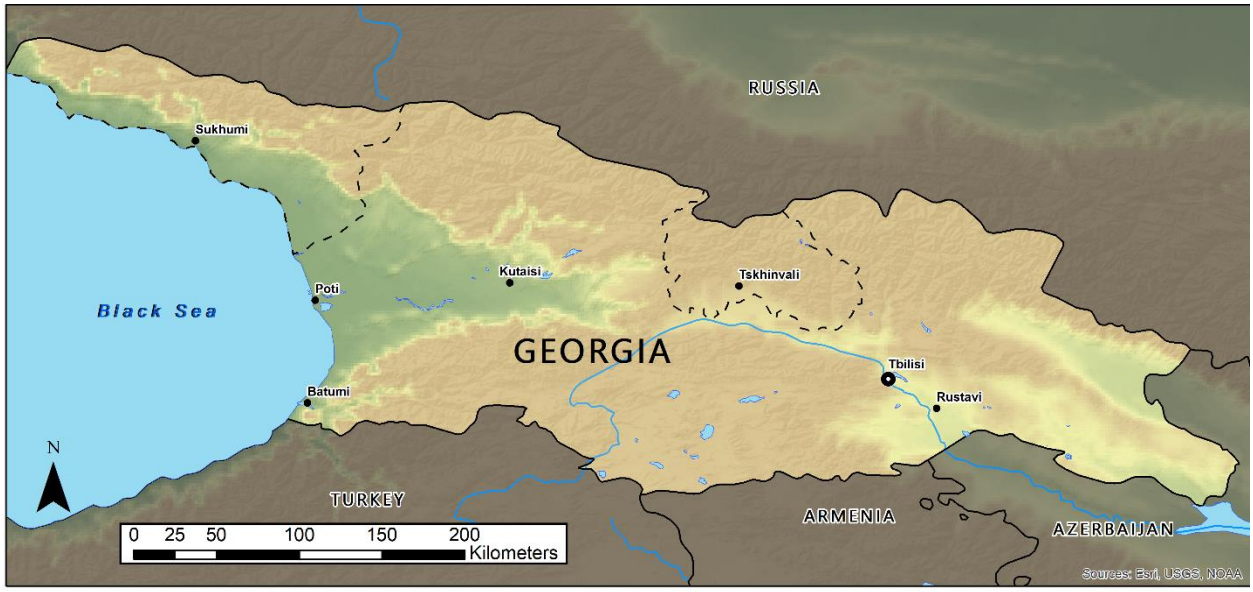
PROJECT NAME	IMPLEMENTER/ FUNDER	DURATION (DATES OF PROJECT)	FUNDING AMOUNT	PURPOSE
Third Regional Development Project	Georgia Municipal Development Fund, Ministry of Finance/ World Bank	2015-2019	75M USD	The project aims to improve infrastructure services and institutional capacity to support increased contribution of tourism in the local economy of the Samtskhe-Javakheti and Mtskheta-Mtianeti regions. The first component, infrastructure investment, will finance urban regeneration of old towns and villages, including restoration of building facades and roofs, public spaces, museums, roads and water systems, and enhancement of cultural and natural heritage sites, including access and presentation. The second component, institutional development, will support institutional capacity and performance of the Georgia National Tourism Administration (GNTA), the National Agency for Culture Heritage Preservation of Georgia (NACHP), the National Museum, the project implementing entity (Municipal Development Fund of Georgia), and other local and regional entities.
Transboundary Joint Secretariat Third Phase (TJS III) (Regional)	World Wildlife Fund/KFW	2015-2020	5M Euro	The aim of this project is to further develop the ECP and promote its implementation in Armenia, Azerbaijan, and Georgia. It will contribute to the conservation of biodiversity in these countries without impairing living standards of local population in the long-term. Reducing conflicts and crisis prevention shall be achieved through contributions through supporting regional sector communication channels. The target groups are populations

PROJECT NAME	IMPLEMENTER/ FUNDER	DURATION (DATES OF PROJECT)	FUNDING AMOUNT	PURPOSE
				adjacent to all protected areas of the South Caucasus. The project shall realize indirect effects for the benefit of these communities through technical and financial support to intermediary structures (ministries, administrative agencies, institutions and other actors in the nature conservation sector). In addition, sector reforms will be supported, including local population engagement with biodiversity, as well as promotion of these resources.
Transmission Grid Strengthening Project	Georgian State Electrosystem, Ministry of Energy, Ministry of Finance/ World Bank	2014-2022	61.88M USD	The project will provide reliable power transmission to the southwestern part of the national grid, upgrade electricity exchange systems, and provide economically efficient and environmentally and socially sustainable electricity sector planning. The project comprises of four components. The third of these, electricity sector strategic environmental and social assessment, will provide consultants' services to prepare a strategic environmental and social assessment for the electricity sector.
Upscaling of Global Forest Watch in Caucasus Region	UNEP/GEF	2018 – 2021	2.2M USD	The project empowers decision-makers in government and civil society with technology and information to help reduce deforestation, facilitate commitments to restoration, and conserve forest biodiversity by developing innovative user-friendly tools that easily share information and provide on-the-fly analyses.

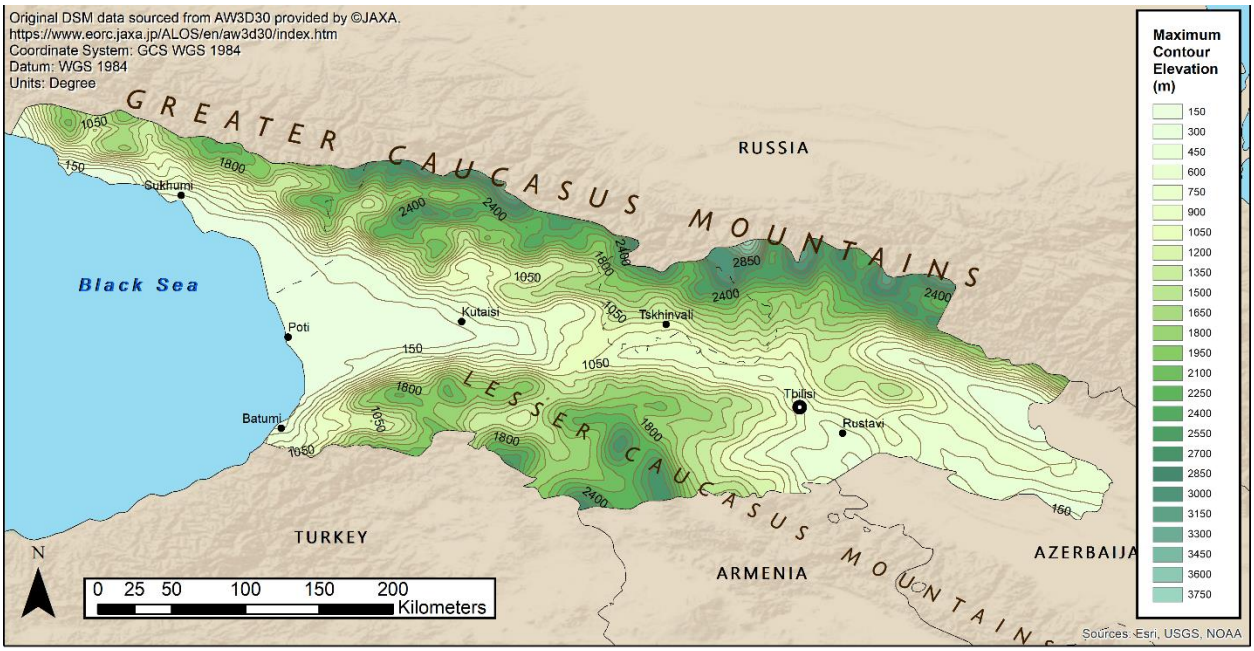
Additional organizations, including the **Swedish International Development and Aid Agency**, **Caucasus Nature Fund, CENN, Green Alternative, Ilia State University, NACRES, Psovi, SABUKO, and the U.S. Forest Service** support programming that addresses the environment or climate more broadly.

H. MAPS[159]

Map 1. Georgia (Standard)

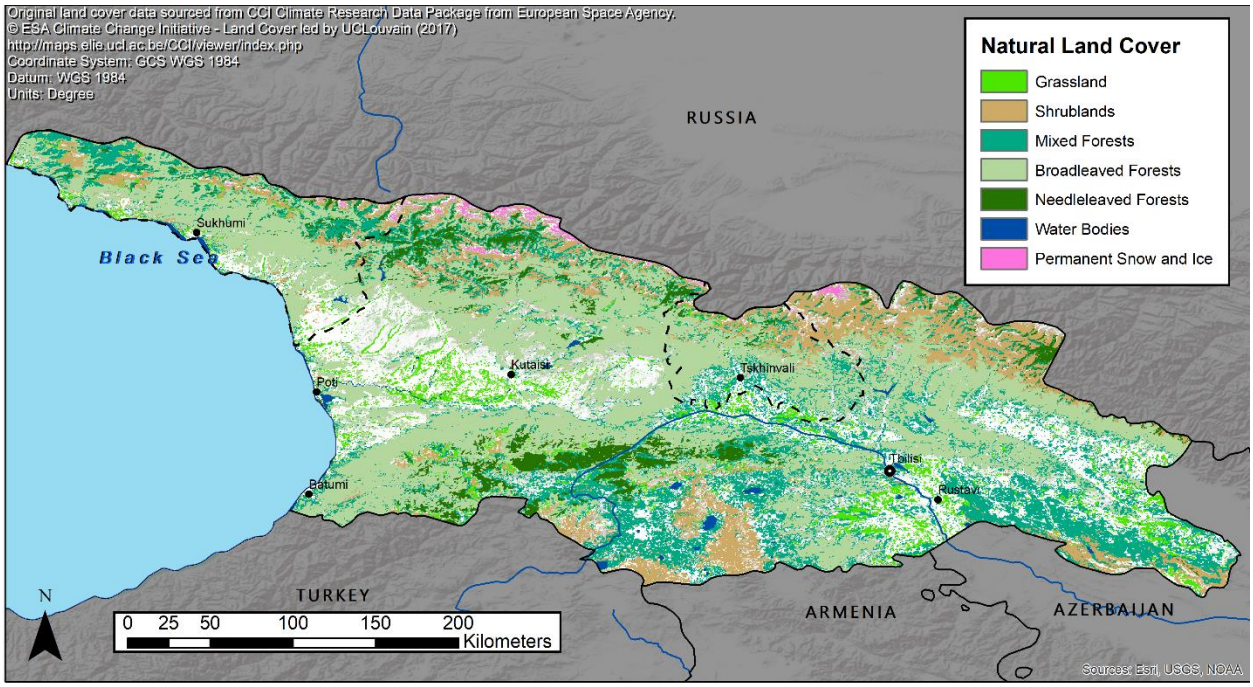


Map 2. Georgia Topography

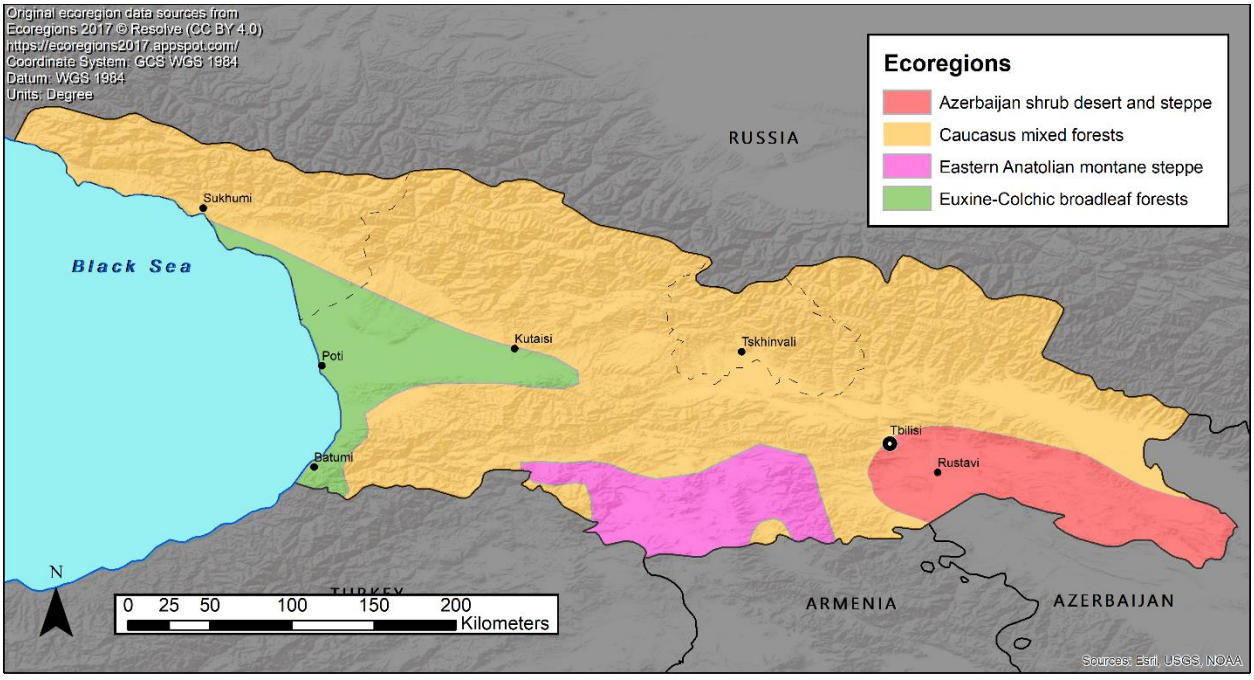


[159] Map references and source attributions are included at the end of this section.

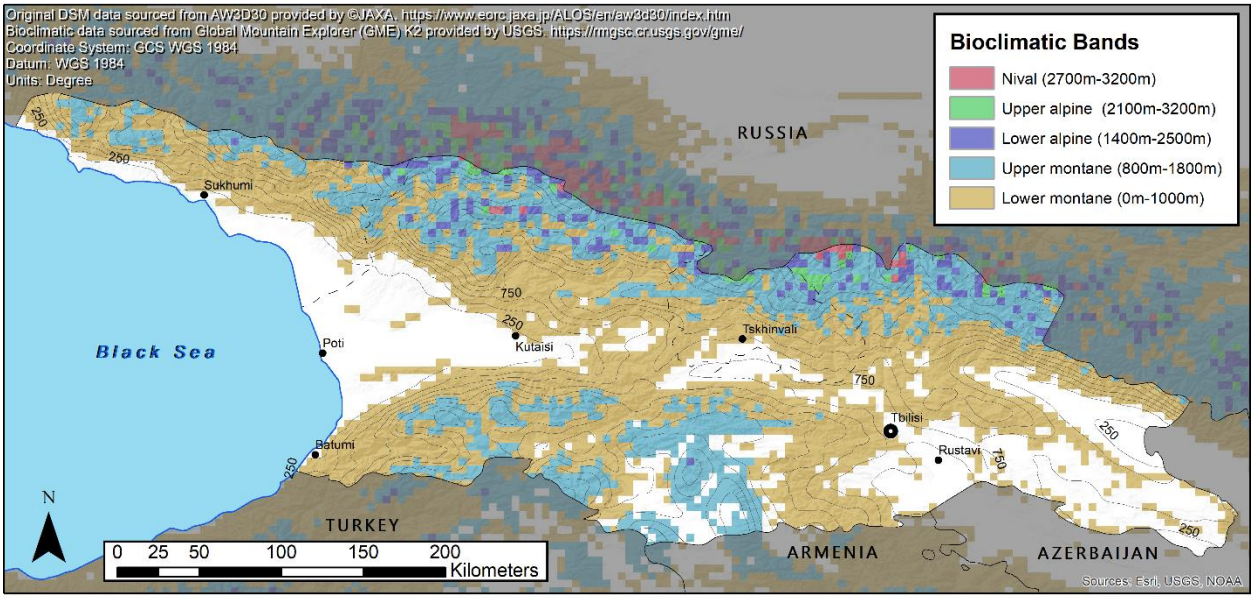
Map 3. Georgia Natural Landcover



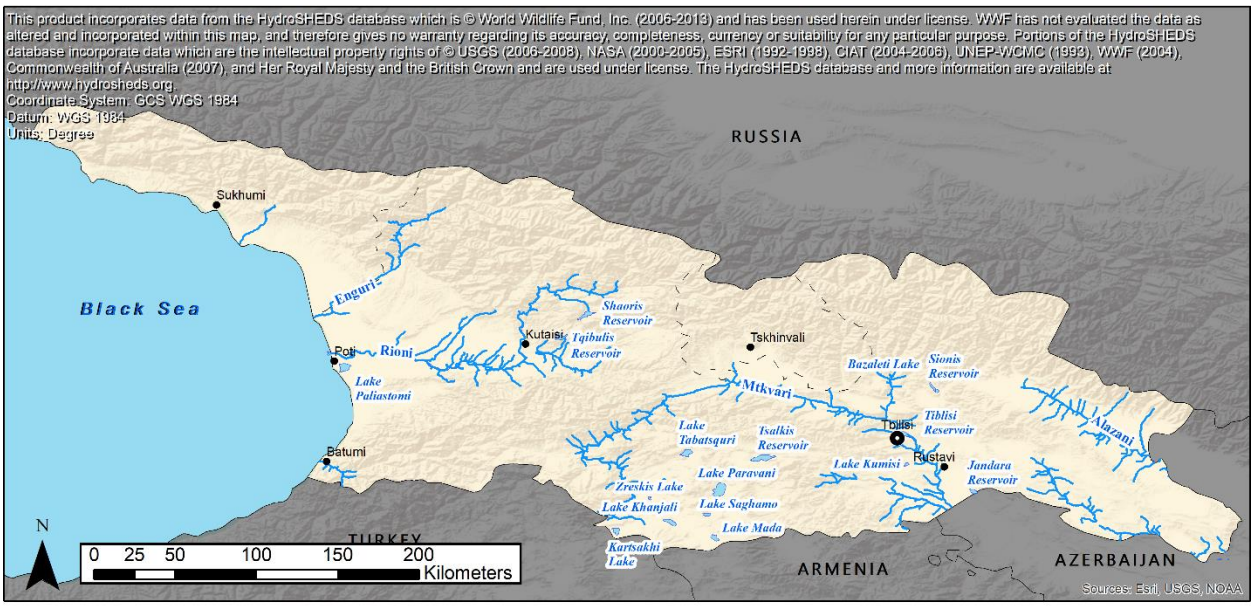
Map 4. Georgia Ecoregions



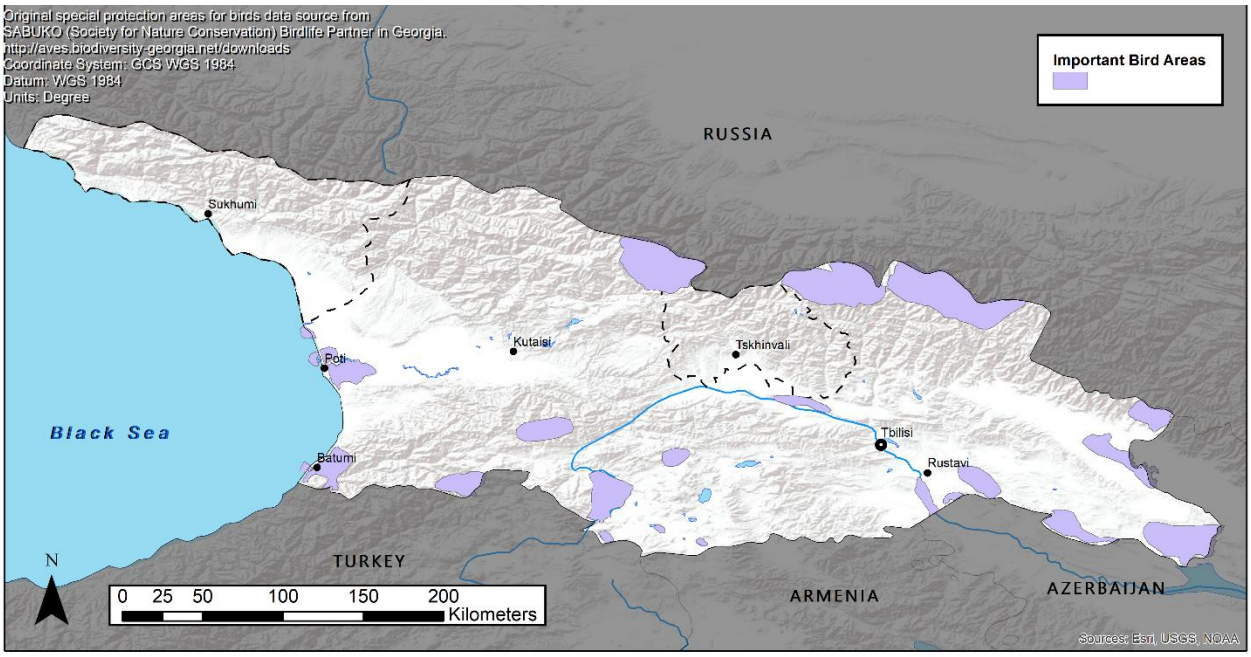
Map 5. Georgia Bioclimatic Bands



Map 6. Georgia Hydrology



Map 7. Georgia Important Bird Areas



Map 8. Georgia Protected Areas

MAP REFERENCES

GEORGIA (STANDARD) MAP

Country Boundary

Made with Natural Earth. 2019. Free vector and raster map data. Available: naturalearthdata.com.

Hillshade/Terrain Background

ArcGIS Online. 2019. World Elevation/Terrain. Available: https://elevation.arcgis.com/arcgis/services/WorldElevation/Terrain/ImageServer.

Cities

Made with Natural Earth. 2019. Free vector and raster map data. Available: naturalearthdata.com.

Waterbodies

Made with Natural Earth. 2019. Free vector and raster map data. Available: naturalearthdata.com.

GEORGIA TOPOGRAPHY MAP

Country Boundary

Made with Natural Earth. 2019. Free vector and raster map data. Available: naturalearthdata.com.

Hillshade/Terrain Background

ArcGIS Online. 2019. World Elevation/Terrain. Available: https://elevation.arcgis.com/arcgis/services/WorldElevation/Terrain/ImageServer.

Cities

Made with Natural Earth. 2019. Free vector and raster map data. Available: naturalearthdata.com.

Waterbodies

Made with Natural Earth. 2019. Free vector and raster map data. Available: naturalearthdata.com.

Elevation Contours

AW3D30, April 2019. ©JAXA. Available: https://www.eorc.jaxa.jp/ALOS/en/aw3d30/index.htm.

GEORGIA NATURAL LANDCOVER MAP

Country Boundary

Made with Natural Earth. 2019. Free vector and raster map data. Available: naturalearthdata.com.

Hillshade/Terrain Background

ArcGIS Online. 2019. World Elevation/Terrain. Available: https://elevation.arcgis.com/arcgis/services/WorldElevation/Terrain/ImageServer.

Cities

Made with Natural Earth. 2019. Free vector and raster map data. Available: naturalearthdata.com.

Waterbodies

Made with Natural Earth. 2019. Free vector and raster map data. Available: naturalearthdata.com.

Land Cover

CCI Climate Research Data Package from European Space Agency. © ESA Climate Change Initiative - Land Cover led by UCLouvain (2017). Available: http://maps.elie.ucl.ac.be/CCI/viewer/index.php

GEORGIA ECOREGIONS MAP

Country Boundary

Made with Natural Earth. 2019. Free vector and raster map data. Available: naturalearthdata.com.

Hillshade/Terrain Background

ArcGIS Online. 2019. World Elevation/Terrain. Available: https://elevation.arcgis.com/arcgis/services/WorldElevation/Terrain/ImageServer.

Cities

Made with Natural Earth. 2019. Free vector and raster map data. Available: naturalearthdata.com.

Ecoregions

Ecoregions 2017 © Resolve (CC BY 4.0). Available: https://ecoregions2017.appspot.com/

GEORGIA BIOCLIMATIC BANDS MAP

Country Boundary

Made with Natural Earth. 2019. Free vector and raster map data. Available: naturalearthdata.com.

Hillshade/Terrain Background

ArcGIS Online. 2019. World Elevation/Terrain. Available: https://elevation.arcgis.com/arcgis/services/WorldElevation/Terrain/ImageServer.

Cities

Made with Natural Earth. 2019. Free vector and raster map data. Available: naturalearthdata.com.

Elevation Contours

AW3D30, April 2019. ©JAXA. Available: https://www.eorc.jaxa.jp/ALOS/en/aw3d30/index.htm.

Bioclimatic Bands

Global Mountain Explorer (GME) K2, 2011. USGS. Available: https://rmgsc.cr.usgs.gov/gme/.

GEORGIA HYDROLOGY MAP

Country Boundary

Made with Natural Earth. 2019. Free vector and raster map data. Available: naturalearthdata.com.

Hillshade/Terrain Background

ArcGIS Online. 2019. World Elevation/Terrain. Available: https://elevation.arcgis.com/arcgis/services/WorldElevation/Terrain/ImageServer.

Cities

Made with Natural Earth. 2019. Free vector and raster map data. Available: naturalearthdata.com.

Waterbodies

HydroSHEDS © World Wildlife Fund, Inc. 2013. © USGS (2006-2008), NASA (2000-2005), ESRI (1992-1998), CIAT (2004-2006), UNEP-WCMC (1993), WWF (2004), Commonwealth of Australia (2007), and Her Royal Majesty and the British Crown and are used under license. Available: *http://www.hydrosheds.org*.

GEORGIA IMPORTANT BIRD AREAS MAP

Country Boundary

Made with Natural Earth. 2019. Free vector and raster map data. Available: naturalearthdata.com.

Hillshade/Terrain Background

ArcGIS Online. 2019. World Elevation/Terrain. Available: https://elevation.arcgis.com/arcgis/services/WorldElevation/Terrain/ImageServer.

Cities

Made with Natural Earth. 2019. Free vector and raster map data. Available: naturalearthdata.com.

Waterbodies

Made with Natural Earth. 2019. Free vector and raster map data. Available: naturalearthdata.com.

Special Protected Areas for Birds

SABUKO (Society for Nature Conservation) Birdlife Partner in Georgia. Available: http://aves.biodiversity-georgia.net/downloads

GEORGIA PROTECTED AREAS MAP

Protected Areas

Agency of Protected Areas, Ministry of Environment and Natural Resource Protection of Georgia. Available: http://mygeorgia.ge/apa. Accessed June 2019.